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# New species of Uredineae—VII

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Since the publication of the last number in this series* of articles many species of rusts have come to light, which appear to be undescribed. Some of these forms are the discovery of collectors in the field, and have been sent to this laboratory for study; other forms have been brought to light in the course of the monographic study of the order in preparation for the North American Flora; and a few forms have been known for many years and have passed under collective names or been placed in the wrong genera owing to imperfect knowledge of the spore-forms. The writer is appreciative of the kindness of his many correspondents who have sent material for study, and who, in most instances, have placed no restrictions upon the use of it, a courtesy to the general cause of scientific advancement.

In the last preceding number of the series a description was published of a rust on an undetermined species of host, locally known as "Washington Vine." It was given the name *Uredo inquirenda*, with the hope that the matter would attract the attention of some one who could suggest the probable identity of the host. This hope has been realized. Mr. Elam Bartholomew writes that the common Matrimony Vine (*Lycium vulgare* Dunal) is known in some localities as "Washington Vine." From this suggestion it has been easy to verify the host of *Uredo inquirenda* as *Lycium vulgare*, and to show that the new name is a synonym of *Puccinia globosipes* Peck.

*New species of Uredineae. Bull. Torrey Club **28**: 661–666. 1901; **29**: 227–231. 1902; **31**: 1–8. 1904; **33**: 27–34. 1906; **33**: 513–522. 1906; **34**: 583–592. 1907.

[The BULLETIN for November, 1910 (**37**: 523–568. *pl. 34, 35*) was issued 30 N 1910.]

**Puccinia Deschampsiae** sp. nov.

O and I. Pycnia and aecia unknown.

II. Uredinia epiphyllous, scattered, oblong or linear, 0.5–1 mm. long, rather tardily naked, yellowish, ruptured epidermis noticeable; urediniospores obovoid or ellipsoid, 19–21 by 26–29μ; wall pale yellow, moderately thin, about 1.5μ, finely verrucose-echinulate, pores 4, equatorial; paraphyses very numerous, clavate or clavate-capitate, 12–15 by 48–90μ, wall light yellow or nearly colorless.

III. Telia epiphyllous, scattered, oblong or linear, about 0.5 mm. long or less, tardily naked, brownish; teliospores oblong or oblong-ellipsoid, 18–23 by 32–48μ, rounded or obtuse above, rounded or somewhat narrowed below, slightly constricted at septum; wall cinnamon-brown, rather thin, 1–2μ, thicker above, 3–5μ, smooth; pedicel short.

On *Deschampsia caespitosa* (L.) Beauv., Longs Peak, Colorado, near the Longs Peak Inn, 2700 meters altitude, August 6, 1907, *F. E. Clements* (Clements, Crypt. Form. Colo. *558*). The presence of paraphyses with the urediniospores, and the four equatorial pores, are characters that make this readily distinguishable from the other numerous grass rusts of the Rocky Mountains.

**Puccinia Parthenii** (Speg.) comb. nov.

*Uredo Parthenii* Speg. An. Mus. Nac. Buenos Aires **6**: 239. 1899.

II. Uredinia amphigenous and caulicolous, or only epiphyllous, usually without causing discoloration or hypertrophy, rounded, 0.3–0.7 mm. across, soon naked, cinnamon-brown, moderately pulverulent, ruptured epidermis noticeable; urediniospores ellipsoid or globoid, sometimes triquetrous and often irregular, 19–26 by 24–32μ; wall yellowish brown, moderately thick, 2–2.5μ, strongly echinulate, pores 2, equatorial or sometimes slightly depressed below the equator, with occasionally a third pore at or near the apex.

III. Telia amphigenous, irregular and often confluent, resembling the uredinia but darker in color, soon naked, seemingly pulverulent, chocolate-brown, ruptured epidermis noticeable; teliospores ellipsoid, often irregular and elongated, 29–32 by 40–45μ, smooth, rounded or obtuse at both ends, slightly or not constricted at septum; wall dark chocolate-brown, thick, 4–6μ, thicker at apex, 6–9μ, by addition of a paler cap or umbo, pore in lower cell conspicuous, near the septum; pedicel colorless, broad but collapsible, once to twice the length of spore.

On *Parthenium Hysterophorus* L. (type host), San Andres Chalco, State of Mexico, Mex., October 8, 1898, *E. W. D. Holway 3228; P. incanum* H.B.K., Kent, Texas, May 7, 1902, *S. M. Tracy & F. S. Earle 324a; P. argentatum* A. Gray, Mazapil, State of Zacatecas, Mex., March 27, 1908; Cedros, State of Zacatecas, Mex., May 22, 1908, *F. E. Lloyd*. Only the specimens of the last two collections show teliospores. Professor Lloyd was for some time engaged in scientific and economic study of the guayule (*Parthenium argentatum*), and took considerable pains to observe the behavior of the rust. He found that the rust does not affect the newer leaves of the season, but appears chiefly on the oldest leaves at the base of the season's growth and consists mostly of uredinia. The telia, which are rarely abundant, are found in the spring on the leaves remaining over from the preceding season. Attempts by both Professor Lloyd and the writer to germinate the teliospores were in vain. The rust is propagated chiefly through the urediniospores. Whether it possesses aecia or not is uncertain.

**Puccinia Glaucis** sp. nov.

O. Pycnia not seen, probably obsolete.

III. Telia amphigenous, solitary or sometimes confluent in small groups, 1.5–2 mm. across, roundish, 0.5–1 mm. in diameter, soon naked, pulvinate, compact, dark brown, becoming gray by germination of the spores, ruptured epidermis inconspicuous; teliospores lanceolate-oblong, 13–16 by 43–50$\mu$, obtuse at both ends, slightly constricted at the septum; wall smooth, golden brown, rather thin, 1–1.5$\mu$, obtusely thickened at apex, 6–9$\mu$; pedicel light yellow, slender, one half to once length of spore.

On *Glaux maritima* L., Halifax, Nova Scotia, August 16, 1909, *John Dearness*. A well-marked leptoform on a host which heretofore has been reported only for a heteroecious *Aecidium*. It was found in considerable abundance.

**Puccinia Nabali** sp. nov.

O. Pycnia not seen, probably obsolete.

III. Telia chiefly hypophyllous, gregarious, in orbicular groups on discolored spots 2–5 mm. in diameter, quite soon naked, roundish, small, 0.2–0.5 mm. across, often crowded and confluent, pulvinate, dark chocolate-brown, ruptured epidermis conspicuous; teliospores clavate or spatulate, 16–19 by 39–45$\mu$, rounded or

truncate above, somewhat narrowed below, slightly constricted at the septum; wall chestnut-brown, considerably paler below, rather thin, 1.5–2$\mu$, much thicker above, 7–9$\mu$, smooth; pedicel somewhat tinted, firm, usually tapering downward, one half length of spore or shorter.

On *Nabalus racemosus* (Michx.) Hook., Seven Islands, Saguenay Co., Quebec, August 6, 1907, *C. B. Robinson 785*. A well-marked species, probably a leptoform, although the sori become uncovered slowly and the spores germinate tardily.

**Uromyces Glyceriae** sp. nov.

O and I. Pycnia and aecia unknown.

II. Uredinia amphigenous, intercostal, scattered, oval or lens-shaped, small, 0.2–0.4 mm. long, soon naked, pulverulent, brownish yellow, ruptured epidermis usually inconspicuous; urediniospores broadly ellipsoid or globoid, 16–21 by 18–26$\mu$; wall pale golden yellow, moderately thick, 1.5–2.5$\mu$, finely and evenly verrucose-echinulate; pores 6–8, scattered, rather distinct.

III. Telia amphigenous, intercostal, scattered, oval or lens-shaped, small, 0.2–0.4 mm. long, tardily naked, finally pulvinate, dark chestnut-brown, longitudinally ruptured epidermis usually conspicuous; teliospores irregularly obovoid or oblong-obovate, 14–19 by 21–34$\mu$, rounded, truncate or obtuse above, usually narrowed below; wall smooth, cinnamon-brown, often paler below, rather thin, 1–1.5$\mu$, apex much thicker, 3–7$\mu$; pedicel slender, tinted, about length of spore.

On *Glyceria septentrionalis* Hitchc. (usually listed as *G. fluitans*), Racine, Wis., Oct. 19, 1890, *J. J. Davis;* Racine, Wis., April, 1891, *J. J. Davis* (type) (Ellis & Everh., N. Amer. Fungi *2718*); Western Union Junction, Wis., Oct. 24, 1897, *J. J. Davis;* Oregon, Ill., Sept. 11, 1889, *M. B. Waite; G. acutiflora* Torr., Newport, R. I., July, 1878, *W. G. Farlow*. This species is very similar in both gross and minute characters to *Uromyces Poae* Rabenh., for which it has been mistaken, but differs especially in having twice as many pores in the urediniospores. The true *Uromyces Poae* has been collected but once in America, so far as the writer knows, which was in Nova Scotia by Professor W. P. Fraser, on *Poa trivialis*.

I am indebted to Dr. Davis for fine fruiting specimens of the host, collected Oct. 1, 1910, from the type station near Racine, with which the identity of the host has been re-established. Dr.

Davis writes that the rust has long since disappeared from the region. The other station at Western Union Junction, now known as Corliss, has become a plowed field, and of course the rust has been annihilated.

**Uromyces Spegazzinii** (De-Toni) comb. nov.

*Uredo Spegazzinii* De-Toni, in Saccardo, Syll. Fung. 7: 845. 1888.

O and I. Pycnia and aecia unknown.

II. Uredinia amphigenous and caulicolous, scattered, or somewhat gregarious, sometimes circinate, roundish or oval, 0.5–0.8 mm. across, soon naked, cinnamon-brown, pulverulent, ruptured epidermis conspicuous; urediniospores oval or broadly elliptical, 20–26 by 26–35$\mu$; wall rather thick, 1.5–2.5$\mu$, dark cinnamon-brown or chestnut-brown, finely echinulate; pores 2, equatorial and opposite.

III. Telia amphigenous, scattered, roundish or oval, 0.6–1 mm. across, soon naked, pulvinate, chocolate-brown, ruptured epidermis conspicuous; teliospores ellipsoid or obovoid, 21–24 by 29–35$\mu$, usually rounded above and below; wall chestnut-brown, rather thick, 1.5–2$\mu$, thicker above, 8–10$\mu$, with a slightly paler umbo; pedicel nearly or quite colorless, rather thick, about length of spore.

On *Commelina virginica* L., Austin, Texas, Oct. 16, 1908; *F. D. Heald & F. A. Wolf 232*, with III; Fisherman's Key, Fla., May 15, 1901, *S. M. Tracy 7239; C. elegans* H.B.K. St. Croix, W. I., Jan. 7, 1896, *A. E. Ricksecker 5; C. erecta* L., Key West, Fla., March 27, 1906, *A. S. Hitchcock; C. angustifolia* Michx., Jensen, Fla., Nov. 8, 1898, *P. H. Rolfs 48;* Miami, Fla., March 25, 1903, *E. W. D. Holway*, Dec. 29, 1905, *Ernst A. Bessey 32*. Common throughout the warmer parts of North and South America on *Tradescantia* and *Commelina*, usually in the uredinial stage.

This species, like many other tropical and semitropical forms reproduces itself chiefly by means of the urediniospores, the teliospores being rarely found. A collection from Texas, made by Messrs. Heald and Wolf in 1908, enables us for the first time to prepare a description of the telial stage.

The type collection was made in Argentina by C. Spegazzini on *Commelina sulcata* and named *Uredo Commelinae*, a name that was given by Kalchbrenner two years later to a quite distinct South African species, subsequently called *Uromyces Commelinae*

Cooke. This led De-Toni to rename the South American rust. Still later names for the latter are *Uredo ochracea* Dietel, founded on a Brazilian collection, and *Uredo commelinacea* Ellis & Kelsey, founded on a West Indian collection.

There is no direct evidence to show whether the species possesses aecia or not; but as nearly all rusts on monocotyledonous hosts do have aecia so far as their life cycles are known, it is a fairly safe inference that aecia will eventually be found for this species.

**Uromyces Coluteae** sp. nov.

O and I. Pycnia and aecia unknown.

II. Uredinia hypophyllous, scattered, roundish, small, 0.2–0.3 mm. in diameter, soon naked, somewhat pulverulent, pale cinnamon-brown, ruptured epidermis conspicuous; urediniospores broadly ellipsoid or globoid, 18–24 by 21–27$\mu$; wall golden brown, moderately thick, 1.5–2$\mu$, finely and rather closely echinulate; pores 3, rarely 4, equatorial.

III. Telia hypophyllous, scattered, roundish, small, 0.2–0.3 mm. in diameter, soon naked, chestnut-brown, ruptured epidermis noticeable; teliospores broadly ellipsoid or obovoid, 15–19 by 19–23$\mu$; wall cinnamon-brown, rather thick, 1.5–2$\mu$, with a small hyaline papilla over the germ-pore at apex, moderately and evenly verrucose; pedicel short, hyaline, deciduous. (FIGURE 1, A.)

On *Colutea arborescens* L., Manhattan, Kansas, August, 1887, *W. A. Kellerman & W. T. Swingle 1650;* Sept. 1, 1890, *W. T. Allen 1205*. This Old World species was found on plants in the nursery and grounds of the State Agricultural College of Kansas. It has heretofore been listed under the name *Uromyces Genistae-tinctoriae*, a combination first used by Winter in Die Pilze, 1881. Winter united a number of forms under the name, because, as he says, he was not in a position to decide upon diagnostic characters. The species differs from the genuine *U. Genistae-tinctoriae*, which is common in Europe on various species of *Genista*, *Cytisus*, and *Laburnum*, by having three equatorial pores in the urediniospores instead of three to six scattered pores, and by the evenly verrucose teliospores instead of those more or less striate (see figure). Spores of intermediate character are not rare. The type collection selected for the new species is the one issued as *no. 403* in Sydow's Uredineen, collected at Meran, Austria, Sept. 13, 1890, by Dr. P. Magnus.

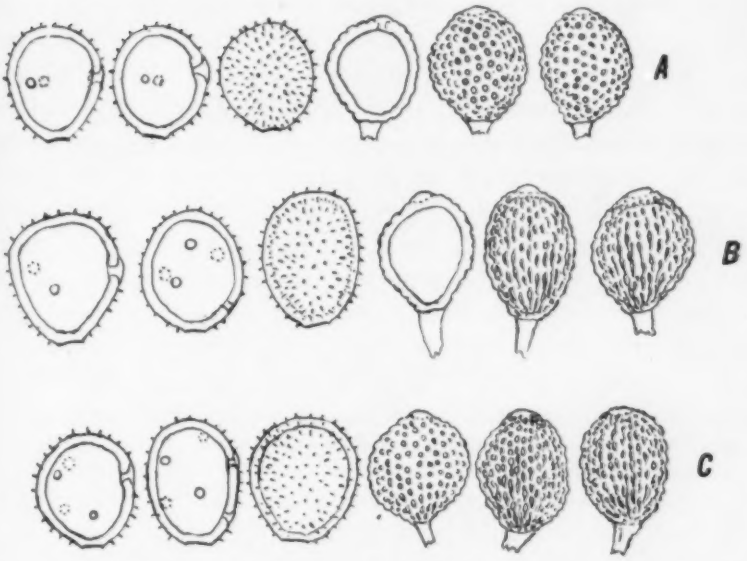


FIGURE 1. Three urediniospores on the left and three teliospores on the right in each row, partly drawn in optical section and partly in surface view: *A*, *Uromyces Coluteae* from type, Sydow, Ured. *403*; *B*, *Uromyces Genistae-tinctoriae* on *Genista tinctoria* from Rabenhorst, Fungi Eur. *1480*; *C*. *Uromyces Genistae-tinctoriae* on *Laburnum vulgare* from Kunze, Fungi Sel. Exs. *516*. ×625.

**Uropyxis Agrimoniae** sp. nov.

O. Pycnia unknown.

II. Uredinia hypophyllous; urediniospores broadly ellipsoid or obovoid, 13–15 by 18–21$\mu$; wall golden yellow, rather thin, 1.5$\mu$, evenly echinulate-verrucose, pores 8, in two zones of 4 each, equidistant from equator.

III. Telia hypophyllous, scattered, soon naked, dark chocolate-brown, pulverulent, ruptured epidermis inconspicuous; teliospores ellipsoid, 18–21 by 25–27$\mu$, rounded at both ends, slightly constricted at septum; wall obscurely laminate, gelatinous layer rarely swelling slightly in water, chocolate-brown, rather thick, 1.5–2$\mu$, slightly thicker at apex, 3$\mu$, closely and evenly verrucose; pores 2 in each cell, lateral, or one of those in the upper cell in the umbo, usually indistinct; pedicel often inserted obliquely, colorless, firm, slender, terete, acuminate and roughened below, not swelling in water, 2–4 times length of spore.

On *Agrimonia mollis* (T. & G.) Britton, Sumner, Mo., Oct. 7, 1907, *E. Bartholomew 3765*. This species is an interesting addition

to the genus *Uropyxis*. The collection was made too late in the season to show characters of the sori well. The teliospores, however, were present in great abundance, but on leaves thickly covered with the bright yellow uredinia of *Pucciniastrum Agrimoniae*, among which the teliospores of the *Uropyxis* were conspicuous on account of their dark color. Owing to the slight development of the gelatinous layer, the teliospores might easily be mistaken for those of some *Puccinia*. The presence of more than one pore in each cell, however, together with correlated but less decisive characters of wall and pedicel, and especially the arrangement of the uredinial pores in zones, leaves no place for doubt that this is correctly assigned to the genus *Uropyxis*. The species should follow the second one mentioned under that genus in the North American Flora **7**: 155. 1907.

**Uredo Spirostachydis** sp. nov.

II. Uredinia caulicolous, scattered, round or roundish, 0.4–0.8 mm. across, soon naked, usually pulvinate and only moderately pulverulent, cinnamon-brown, ruptured epidermis conspicuous; urediniospores ellipsoid or oblong, 18–21 by 23–29$\mu$; wall dark golden brown, closely and rather coarsely echinulate, moderately thick, 2–2.5$\mu$, pores 6–8, scattered.

On *Spirostachys occidentalis* S. Wats. (*Allenrolfea occidentalis* Kuntze), north of Yuma, Ariz., April 26, 1906, *Marcus E. Jones 7815*. The microscopic characters of the spores are in close accord with those of *Uromyces Chenopodii* (Duby) Schröt., as represented by Kunze, Fungi Selecti Exsiccati *214b*, but in the absence of teliospores it is unwise to use that name or that of any other European species. A name and description are supplied for this collection to call the attention of western mycologists to the species. It will doubtless be found also to possess aecia, appearing very early in the season in such localities as have favored the formation of telia at the close of the previous season. The succulent stems of the host are well covered with the rusty-colored sori, and the telia when discovered will probably have a similar appearance, but probably a little darker.

**Uredo Beloperonis** sp. nov.

II. Uredinia amphigenous and caulicolous, scattered, sometimes circinate, roundish or elongated, large, 0.5–2 mm. across,

early naked, somewhat pulvinate, pulverulent, chocolate-brown, ruptured epidermis conspicuous; urediniospores broadly ellipsoid or obovoid, 21–26 by 26–31μ; wall cinnamon-brown, rather thick, 2–2.5μ, hilum usually conspicuous, evenly echinulate, pores 2, opposite and equatorial, readily seen.

On *Beloperone californica* Benth., western edge of the Colorado Desert, California, April 17, 1907, *S. B. Parish 6170*, communicated by E. W. D. Holway. This acanthaceous rust is somewhat similar to *Uredo varia* Diet. of Brazil, but differs materially in all gross and microscopic characters except size and shape of spores. It is a conspicuous form.

**Uredo Wilsoni** sp. nov.

II. Uredinia hypophyllous, scattered, punctiform, 0.1–0.3 mm. across, soon naked, pulverulent, chestnut-brown, ruptured epidermis inconspicuous; paraphyses abundant, peripheral, terete, apparently jointed, walls smooth, colored; urediniospores globoid, or broadly obovate, 21–25 by 26–29μ; wall light chestnut-brown, rather thick, 2–2.5μ, strongly verrucose with colorless, conical warts, slightly separated from each other, pores 2, opposite and equatorial, not easily seen.

On *Anastrophia bahamensis* Urban, Hanna Hill, Long Cay, Bahama Islands, Dec. 7–17, 1905, *L. J. K. Brace 4029*. This rust was detected by Mr. Percy Wilson of the New York Botanical Garden, while studying the West Indian collections in the herbarium, and in recognition of this and other services rendered to the taxonomic work of the North American flora, both mycological and phanerogamic, I take the opportunity to express appreciation in the form of the name.

The powdery spores of the rust are entangled in the thick, cottony pubescence of the lower surface of the leaf, as they are discharged from the minute, subepidermal sori, and make fuscous spots in the white felted surface. Only one collection bore the rust. Other collections of the same host and also those of other species of the same genus showed very similar spots at first mistaken for it, which are made by a blackish and non-pulverulent pyrenomycetous fungus.

The spores of this rust are not especially notable, but the long, jointed paraphyses are highly distinctive and unusual. Its occurrence within the tribe Mutiseae of the composites, from which

this is probably the first rust recorded, and its endemic character on a shrub of one of the smaller West Indian islands, are items that make the study of the other stages in its life cycle, and of its relationship and distribution, matters of more than usual interest.

**Peridermium fructigenum** sp. nov.

O. Pycnia episquamous, numerous, inconspicuous, subcuticular, semicolumnar or irregular-conoidal, 48–58$\mu$ in diameter by about 35$\mu$ high; ostiolar filaments wanting.

I. Aecia episquamous, numerous, often crowded thickly over the whole surface of a scale, oblong, 0.3–0.5 mm. wide by 0.7–1.5 mm. long, often confluent, subepidermal, soon naked, dingy white when dry, ruptured epidermis noticeable; peridium irregularly convex, soon dropping away, peridial cells ellipsoid, loosely united, resembling the spores, but somewhat larger, rougher, and often compressed into irregular shapes; aeciospores broadly ellipsoid or obovate, rather small, 13–16 by 19–22$\mu$; wall colorless, moderately thick, 2–2.5$\mu$, rather finely and closely verrucose.

On *Tsuga canadensis* (L.) Carr., East Granby, Conn., June 21, 1908, *Perley Spaulding 114*. The fungus gives the cones a peculiar, whitened appearance. It is remarkable that the rust should have so long escaped the attention of collectors. The elevated pycnia and evanescent peridium readily distinguish this species from *P. Peckii* Thüm., which occurs on the leaves of the same host.

In the study of the genus *Peridermium*,* made some time ago by Mr. Kern and the writer, it was pointed out that the number of American species known, having subcuticular pycnia, was considerably less than the number of telial species known requiring similar aecia. This additional species helps to lessen the discrepancy. In accordance with the chain of reasoning there employed, the new form on *Tsuga* doubtless goes to some species of *Pucciniastrum*, and judging from known distribution, it may be the aecial form of *Puc. minimum* (Schw.) Arth., having telia on *Azalea*.

**Aecidium leporinum** sp. nov.

O. Pycnia not seen.

I. Aecia hypophyllous, gregarious in circular groups 1–3 mm. across, crowded, on substratum scarcely thickened and little discolored, 0.2–0.4 mm. high; peridium cylindrical, erect or somewhat

*Arthur & Kern, North American species of *Peridermium*. Bull. Torrey Club 33: 403–438. 1906.

recurved, erose, peridial cells strongly imbricated, rhomboidal below, becoming ovate-lanceolate above when seen in radial section, outer wall nearly or quite smooth, inner wall somewhat thicker, closely and prominently verrucose with slender, elongated warts; aeciospores angularly and broadly ellipsoid or nearly globoid, 18–21 by 24–29$\mu$; wall pale yellow, rather thick, 2–2.5$\mu$, greatly thickened above, 7–9$\mu$, closely and finely verrucose.

On *Macrosiphonia brachysiphon* (Torr.) A. Gray, Guayamoba Canyon, Sierra Madre Mts., Chihuahua, Mex., Sept. 27, 1903, *M. E. Jones 7774*. The strongly thickened apical wall of the spores readily distinguishes this form from similar forms on the Apocynaceae, and especially from those mentioned below.

**Aecidium obesum** sp. nov.

O. Pycnia amphigenous, numerous, crowded in opposed groups, 0.3–1 mm. across, small, inconspicuous, punctiform, honey-yellow becoming brownish, flattened-globoid, 96–128$\mu$ broad by 58–77$\mu$ high; ostiolar filaments 30–48$\mu$ long.

I. Aecia hypophyllous, gregarious in circular groups 2–7 mm. across, crowded on scarcely thickened but much discolored spots, exserted portion evanescent; peridial cells imbricated, easily falling apart, obovate-lanceolate in radial section, inner wall finely verrucose, outer wall somewhat thicker, strongly verrucose, aeciospores globoid or somewhat ellipsoid, large, 28–35 by 32–40$\mu$; wall colorless, greatly thickened, 5–8$\mu$, irregular within, forming an angular or stellate cavity, closely and prominently verrucose.

On *Apocynum hypericifolium* Ait. (*A. cannabinum hypericifolium* A. Gray), Manhattan, Kanas, May 15, 1886, *W. A. Kellerman* (type), (Ellis, N. Amer. Fungi *1823;* Vestergren, Micr. Rar. Sel. *1101*); Merriam, Neb., July 11, 1899, *J. M. Bates*. This form has been confused with *Aecidium Apocyni* Schw., which occurs east of the Alleghany mountains from New Jersey to North Carolina. The eastern form has a firm peridium, and small aeciospores, 16–20$\mu$ in diameter, with thin walls, 1–1.5$\mu$.

Through the kindness of Prof. T. J. Burrill I have been able to examine the collection recorded in Burrill's Parasitic Fungi, page 236, which was made by Mr. A. B. Seymour at Normal, Ill., June 14, 1882, and find that it consists of a single leaf of *Apocynum hypericifolium* with a single group of pycnia, but gathered too early to show even the beginning of aecia. It is impossible to decide even approximately upon the identity of the fungus.

**Aecidium libertum** sp. nov.

O. Pycnia not seen.

I. Aecia hypophyllous, evenly distributed over the whole surface of the leaf, substratum neither thickened nor discolored; peridium short-cylindrical, 0.3–0.4 mm. in diameter, margin somewhat recurved, lacerate, peridial cells cuboidal, squarely abutted except a downwardly imbricated outer tooth, outer wall smooth, 5–7$\mu$, inner wall slightly thinner, 3–4$\mu$, and closely verrucose; aeciospores angularly globoid, 17–19 by 18–23$\mu$; wall pale yellow, thin, 1$\mu$, closely and finely verrucose.

On *Urtica chamaedryoides* Pursh, Sapulpa, Indian Territory (now state of Oklahoma), May 1, 1895, *B. F. Bush 1269*, communicated by A. G. Johnson, who found the material in the phanerogamic herbarium of the Missouri Botanical Garden, St. Louis, Mo. This form is strikingly different from the aecia commonly found on *Urtica*, which belong to the cosmopolitan *Carex* rust, *Puccinia Caricis*, only in the distribution of the aecial sori over the host. In the structure of the aecium, and in the size, shape, and markings of the peridial cells and aeciospores, the two forms are essentially alike. Although the mycelium occupies all or most of each leaf, and most of the leaves on the plant, yet it may not be a perennial mycelium, but be diffused from an early spring infection. Most of the rusts having evenly scattered aecia, especially if the mycelium is annual, are autoecious, and there is considerable probability that in this case the associated telia will be found to follow upon the same host, and without the accompaniment of uredinia. In this connection it may be pointed out as of incidental interest that the teliospores of the leptoform, *Puccinia Urticae* Barclay, found in India, agree essentially with the teliospores of *Puccinia Caricis* (Schum.) Schröt. (*P. Urticae* Lagerh.), adding another example of the curious morphological agreement between heteroecious species with many spore-forms and autoecious species with one spore-form affecting the same host, pointed out by Dr. Tranzschel of St. Petersburg. The new *Aecidium* on *Urtica*, here described, may prove to be an extension of this same example.

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# Viola palmata and its allies

EZRA BRAINERD

(WITH PLATE 36)

Of the 54 species, as I understand them, of North American violets east of the 100th meridian, 28 (or over one half) are of the class familiarly known as "blue stemless violets"; and of these 28 species 13 belong to a natural group represented by the widely distributed *Viola palmata* and *V. papilionacea*. The group is well characterized by having its cleistogamous flowers on short prostrate peduncles, often concealed under dead leaves or soil; as a rule the leaves are reniform in outline, the spurred petal glabrous or nearly so, the auricles of the sepals short and appressed, and the cleistogamous capsules purplish or flecked with purple.

The group is readily subdivided into species that have lobed or parted leaves, and species that do not. The cut-leaved species, of which there are six, have been greatly confused from the time when *V. palmata* was first described and figured by Plukenet in 1692 till the present. This may be, in part, because they have their fullest development in the South, where the genus has been of late less critically studied than in the North and West. But it is also quite evident that both past and present botanists have been perplexed and misled by the frequent occurrence of aberrant forms that have arisen from the crossing of *V. palmata* and *V. triloba* with each other and with allied species.

The cut-leaved species may be separated into two radically distinct subgroups represented by *Viola palmata* and *V. triloba*, and differing as follows:

A. In the *palmata* subgroup *uncut leaves are rare, if not altogether wanting;* in the *triloba* subgroup *they are frequent*, the first one or two leaves of spring and the leaves of late summer being generally uncut. In other words, the latter subgroup is strictly *heterophyllous;* the former subgroup, *homophyllous*.

B. In the *palmata* subgroup *the leaves are palmately cut;* in the *triloba* subgroup the leaves are *pedately cut*. In all cut-leaved species of *Viola* the primary cutting is ternate, as in *Trifolium*.

If the segments were not also cut, there would be no distinction into palmate and pedate; but they usually are cut, and in two widely different ways: either (*a*) both the middle and the lateral segments are again trisected or bisected, or (*b*) the middle segment remains simple, but the lateral segments are cut one or more times, the successive incisions being shorter toward the base of the leaf. The first way gives the palmate leaf; the second the pedate leaf. Abundant illustration of this will appear, as we discuss the several species of the group.

It is noteworthy in our ten species of cut-leaved stemless violets, that those pedately cut are always heterophyllous, and those palmately cut always homophyllous. There should be some explanation of this correlation, though it is not obvious. Still, as regards the six species of the *palmata* group, may we not regard it as an evidence that the two subgroups are genetically distinct—the *triloba* species all descending from an ancestor bearing pedately cut leaves at the time of greatest sexual vigor, and the *palmata* species from an ancestor bearing at all times palmately cut leaves?

There has been some scepticism as to the correctness of the commonly accepted interpretation of the Linnaean VIOLA PALMATA. His diagnosis is certainly meager and indecisive. But he cites several earlier publications, three of which are backed up by extant specimens, and one by a published figure. The latter is in Plukenet's Amaltheum, plate 447, figure 9. The flower of the figure is not that of a violet, and is wanting in the dried specimen in herb. Sloane, London. Mr. E. G. Baker reports, in the Journal of Botany for April, 1898, that the specimen is in part distinctly pubescent, and the text of Plukenet informs us that the plant was from Florida. Now, the only cut-leaved pubescent violet found in Florida is what we have been calling *Viola palmata*.

It is quite likely that some of the specimens cited by Linnaeus, collected later in Viriginia, were forms of *V. triloba*. Clayton's *793*, in Gronovius' Flora Virginica, p. 182, 1743, is described as "foliis variis, aliis integris, aliis incisis." Linnaeus's description is, "foliis palmatis, quinquelobis dentatis indivisisque." But the two Plukenet specimens of the 17th century have no strictly uncut leaves; and in the published figure one leaf has seven lobes. Mr. Baker, as above cited, says "The plant figured by Dr. Britton as

*V. palmata* in his Ill. Flora [**2**: 446] well represents the species in question, except that the leaves in the types are not so much lobed,"—i. e., have fewer lobes. The Linnaean species are often composite; but even should this prove to be the case with his *V. palmata*, we have abundant warrant for restricting the name to the extant specimens cited by him,—the species earliest described, and known to botanists since the publication of the Species Plantarum as *Viola palmata*.

I recognize three forms, or geographical races, of *V. palmata* in the eastern United States:

1. The form of the coastal plains of the south Atlantic States. —I have grown now for three seasons vigorous plants of this from central Florida, kindly sent me by Mrs. Agnes Chase. I collected it near Jacksonville, in March, 1909; and near Eutaw Springs, S. C., in March, 1907. Frequent colonies were seen for a stretch of ten or twelve miles along the old turnpike from Charleston to Columbia; but here grew also colonies of *V. triloba*, and hybrids between them. However, most plants were pure and quite like those of Florida. The leaves in March are rather deeply 5–7-lobed, the outer margin distantly serrate, the lower surface often purplish; the late summer leaves—of plants grown—were 6–10 cm. wide, the basal lobes often much dilated and coarsely toothed, the lobes between the basal and the medial long and narrow.

2. The upland form along the Alleghanies from northern Georgia to western Massachusetts.—This is rarely found near the coast in the Middle Atlantic States; but occurs near the Blue Ridge in Virginia and Pennsylvania, across northern New Jersey, on shady ledges of the lower Hudson, New York, in Connecticut especially on hills of trap, and at Great Barrington, Massachusetts. The leaf of this form is often somewhat elongate, and has more numerous and shorter incisions than the southern form. It is well figured in the Illustrated Flora.

3. The form of the Great Lakes region, from the south shore of Lake Ontario to Minnesota.—This is marked by long, narrow, and still more numerous lobes, often as many as thirteen. It is referred to by Dr. Britton in the Illustrated Flora, as a "form with the lateral leaf-lobes linear, perhaps distinct." In the Britton Manual it is put forth as "*V. Bernardi* Greene" by Mr. Pollard,

misled by Professor Greene, who had confused two things under that name. In June, 1906, having "thought out" the matter, Professor Greene named the plant *V. perpensa* (Leaflets **1**: 184).

I have for three years watched these forms under cultivation, and I find no mark of specific difference in petaliferous or apetalous flowers, in pubescence, capsule, or seed. They seem to differ only in the style of lobation. In each form there is a wide range of fluctuation, the leaf assuming a different aspect, not only with change of environment, but at successsive stages of growth. The leaf-forms intergrade where the territory of one form adjoins that of another. Specimens from Syracuse, N. Y., have both styles of leaf-pattern on the same plant. I am therefore at present disposed to regard the form of the Alleghanies and that of the Great Lakes as but geographical races of the typical *V. palmata* of the south Atlantic Coast.

The species nearest akin to *Viola palmata* are *V. Stoneana** and *V. Egglestonii*,† both glabrous, both of limited range, and both well marked.

VIOLA TRILOBA was published in 1822 by Schweinitz, with some hesitancy, due chiefly to his failure to realize that he had widened the scope of Pursh's *V. asarifolia* (= *V. sororia*), so as to take into it much that properly belonged to *V. triloba*. The uncut leaves of *V. triloba* are not easily distinguished from those of *V. sororia;* and furthermore, the two plants are often cohabitant and hybridize freely. I infer that Schweinitz encountered these hybrids, for he says under *V. asarifolia*, "Not unfrequently tufts are met with of more than one foot diameter"; and also, "This species is very often found with flowers remarkably variegated, with white blotches, in an irregular way." Pied flowers and a cespitose growth are quite characteristic of hybrids. I have met with several crosses of *V. triloba* with *V. sororia* or with *V. papilionacea* in the highlands of North Carolina,‡ and with many plants that seemed the by-product of such hybrids; that is, plants with

*See Proc. Acad. Nat. Sci. Phila. **1903**: 678. *pl. 35. f. 2; pl. 39. f. 3.* 1903; Bull. Torrey Club **32**: 253. *pl. 16.* 1905.

†Bull. Torrey Club **37**: 526. *pl. 34, 35.* 1910.

‡Schweinitz lived for many years in Salem, N. C., and while there prepared his admirable paper on *Viola* in Am. Jour. Sci. **5**: 48–81. 1822.

leaves all uncut, as in *V. papilionacea*, but broadly dilated, truncate rather than cordate, with densely pubescent petioles, as in *V. triloba*. These *pseudo-sororia*'s are not uncommon in the middle Atlantic states, and are a frequent source of perplexity. Their hybrid origin is usually betrayed by their infertility.

This confusion by Schweinitz of the lines of separation between *V. sororia* and *V. triloba* was clearly shown by LeConte in his classic paper on *Viola*, published four years later. He had, I think, a correct notion of *V. triloba*, and was confident, as some moderns are not, that it differed specifically from both *V. palmata* on the one hand, and from *V. sororia* on the other. "The points of difference" he writes, "can hardly be expressed; nevertheless, I do not hesitate to pronounce it to be distinct from them all. There is something peculiar in the aspect, or if you please in the physiognomy, of each, which cannot be described, but which makes them appear distinct at first sight."*

LeConte saw fit to publish this species under a name of his own, *V. congener;* but he adds, "To this I cannot avoid referring *V. triloba* of Mr. Schweinitz; I always regret to disagree with so high an authority, but I have never been able to see between his plant and my *V. congener* any difference that was not accidental."† If so, then the name *Viola congener* must lapse in favor of the older *V. triloba*.

It has already been stated that *V. triloba* differs from *V. palmata* in having both cut and uncut leaves, and in having the cut leaves pedate instead of palmate, the latter character appearing only when the leaf is at least 5-lobed. It will then be found that the extra lobe on either side, between the basal and the medial, is morphologically a part of the basal and not of the medial. Occasionally the sinus may be deeper between the extra lobe and the basal, than between the extra lobe and the medial; but if one

*Disterminatio vix erui potest: veruntamen distinctam esse ab omnibus discernere non haesito. Aliquid peculiare in aspectu vel si vis in physiognomonia singularum est quod non describi potest, sed primo obtutu distinctas reddit. Annals Lyceum N. Y. 2: 140. D 1826.

†Huc referre Violam trilobam cel. Schweinitz vitare non queo; semper mihi dolet cum auctoritate tam veneranda dissentire, sed nunquam differentiam aliquam inter ejus plantam, et meam V. congenerem videre potui quae non fortuita fuit. LeConte, *loc. cit.* 141.

will trace the veins of the extra lobe downward, they will be found to coalesce with the veins of the basal lobe before they together join the midvein from the medial. Mr. Witmer Stone in his paper on the violets of Philadelphia and vicinity has figured* thirteen leaves of this species, and without intention, perhaps, has displayed their pedate character.

I have collected *V. triloba* as far south as Savannah, Ga., and as far north as Orwell, Vt. Between these latitudes it occurs from the coast westward across the Appalachian Mountains, though not at high altitudes northward.

The radical difference between *Viola triloba* and *V. palmata* will appear more pronounced after we have discussed another long misunderstood type of our early botanists, the *V. palmata*, var. DILATATA of Elliott. It has appeared in recent articles and text-books as equivalent to *V. triloba;* but an attentive reading of Elliott's description ought to convince an experienced botanist to the contrary, for Elliott's plant has deeply parted leaves. He reports it as common in the uplands of Georgia and Carolina; surely it ought to be identified. After visiting this region in April for three successive years, I am satisfied that it is the same thing that Professor Greene published, in January, 1899, as *V. falcata*. (Pittonia **4**: 3.)

First let us place side by side the descriptions of these two types. Some of the clauses from Elliott are rearranged to bring out the parallelism, but no word is altered or omitted; the clauses from Greene covering the same points are given in the finer type beneath.

ELLIOTT: c. *dilatata:* with leaves deeply three parted,
GREENE: blades of broad deltoid outline primarily deeply cleft or even divided into 3 segments,

the middle segment large, toothed;
of which the middle one is usually simple lanceolate or rhombic-lanceolate, } remotely toothed above the middle or even throughout.

the lateral segments 2 cleft,
the lateral divisions mostly cut into two or more lobes or subdivisions,

the exterior division dilated and toothed, sometimes dissected;
of which the outer are more or less notably lunate or falcate.

*Proc. Acad. Nat. Sci. Phila. **1903**: *pl. 33*.

the whole plant very pubescent.
sparsely pubescent, the long petioles retrorsely hirsutulous.

It might be difficult to say which is more admirable, the clear conciseness of Elliott, or the detailed exactness of Greene; but surely all must concede that both these expert phytographers are describing the same thing—a pubescent violet with pedately dissected leaf. The apparent discrepancy between "very pubescent" and "sparsely pubescent" is due to the fact that Professor Greene's specimens were collected in southern Illinois, June 15, about two months after petaliferous flowering. When the plant blooms, in the South about the first of April, the unfolding leaves are markedly pubescent; two months later when they have attained their normal size the pubescence, spread out over a surface perhaps thirty times as great, seems sparse. Moreover, as with most pubescent violets, the leaves *produced* in midsummer are nearly glabrous. Such foliage is commonly described by the ambiguous word "glabrate."

Now to which of the older species has this var. *dilatata* of Elliott the closest kinship? Surely not to *Viola palmata* as he supposed; *that* has leaves palmately cut and seeds always dark brown; Elliott's plant has only some leaves cut and that pedately, and seeds always a light buff. But in these characters it agrees with *V. triloba*, as it does also in flowers, capsule, and pubescence. The only difference that I can make out is that in var. *dilatata* the cut leaves have more and deeper incisions. Moreover, in the southern Alleghanies where both forms occur, they are connected by numerous intergradations. I am therefore compelled to call the plant:

**Viola triloba** Schwein., var. **dilatata** (Ell.), comb. nov. *V. palmata* L., var. *dilatata* Ell.; *V. falcata* Greene.—Dry woodlands and thickets; abundant from southwestern Louisiana northward to northern Oklahoma, southern Missouri, and southern Illinois; thence eastward to northern Georgia and western North Carolina (PLATE 36).

Flowering specimens of this attractive violet are rarely seen even in university herbaria. It was distributed in Greene and Pollard's decades—no. 2, collected at Biltmore, N. C., June 3–17, 1899, long out of bloom. Other collections are: *Eggleston 4506*, Kuttawa, western Ky., June 2–18, 1909; *Bush 2313*, Fulton, Ark.,

April 13, 1905; *Bush 2942*, Swan, Mo., May 21, 1905; *Bush 4435*, Chadwick, Mo., May 14, 1907—all in fruit. Specimens in flower are: *Bush 4208*, Swan, Mo., April 21, 1907; and *Bush 4340-A*, Monteer, Mo., April 27, 1907. Specimens collected last March and April in Crowley, La. (within 45 miles of the Gulf), at Mansfield, La., at Mena, Ark., and at Westville, Okla., appear in my distribution, 1910, of violets of eastern North America.

A few words should be said of another little-known violet of Elliott's, V. ESCULENTA. It appears in Small's Flora of the Southeastern United States as *V. heterophylla* Muhl. The type is to be seen in the Elliott herbarium, now carefully preserved in the Charleston Museum. The plant has unusually long petioles and peduncles—most over 25 cm.—apparently "drawn" from the crowding of other plants. It has one uncut leaf on a petiole of 10 cm., one cordate-ovate leaf with short hastate lobes, and two broadly reniform leaves deeply 5-lobed. Raised above the leaves is a half-grown capsule split in drying, and three cm. lower, a petaliferous flower. The ticket has the following inscription:

Viola esculenta
mihi:
Heterophylla
Muhl:
Flor. Apr:
in udis, river swamps.
Ogeechee etiam in Pennsyl:

When, however, in 1817 Elliott published this violet in his Botany of South Carolina and Georgia, it was under the name *V. palmata* L., var. *heterophylla*, with the remark, "From the circumstance of its being eaten by negroes, I had called it *V. esculenta;* it is however the *V. heterophylla* of Muhlenberg." A valid publication of this last specific name was made by LeConte in 1826. He observes that the plant bears hardly any affinity to *V. palmata*, and adds, "It is strange that Elliott, otherwise sufficiently disposed

to multiply species, was content to regard this as a variety."* Doubtless both were in error in regarding Muhlenberg's northern plant as identical with the glabrous species of southern river-swamps. *V. heterophylla* stands merely as a name in Muhlenberg's catalogue of 1813; but his plant was probably *V. triloba*, a very common violet of eastern Pennsylvania. Fortunately, the *V. heterophylla* published by LeConte is invalidated by two earlier uses of the name, and effective publication of *V. esculenta* was made by Professor Greene in 1898 (Pittonia 3: 314).

*Viola esculenta* is very abundant in the suburbs of Jacksonville, Florida, in low woodlands on the borders of sluggish brooks, or "branches." In the older plants the rootstock has a crimson color and branches widely; the leaves, at least in cultivation, are spreading and become stiff and succulent; the flower is pale violet or white; the seeds normally light buff, though in some colonies they are a dark brown. The plant, which I have grown for two seasons and also raised from seed, strikingly illustrates the habit of the heterophyllous violets in putting forth characteristic lobed leaves only at the time of petaliferous flowering and fruiting. Not only are the late summer leaves uncut or obscurely lobed, but the seedling plants are so through the whole of the first season's growth. It is especially true of *V. esculenta* that cut leaves mark the period of the plant's greatest reproductive vigor. As LeConte says with a touch of poetry, "when flowering it takes delight in lobed leaves."† The foliage is usually quite glabrous; but in one colony I found it somewhat pubescent. I suspect this pubescence and the dark brown seeds may have come about through intimacy with a nearby colony of *V. palmata*. But in the several plants tested, I found that both these off characters, though 'dominant,' came true from seed.

*"Mirum est Elliottum alioquin satis proclivem ad multiplicandum species hanc pro varietate habere contentum fuisse."—Elliott lumped together *all* the cut-leaved stemless violets of his region under *V. palmata* and its varieties. Besides the two discussed above, *V. triloba* is covered by his description of *V. palmata*, and his var. *vulgaris*, of which he says "The two exterior lobes of the leaves have frequently a small segment near the base; grows very common in light soil," is plainly what LeConte published later as *V. septemloba*. Dr. Gray, also, aggregated these forms in the Synoptical Flora, allowing none even varietal rank.

†Cum primum e terra prodit, foliis integris, inflorescens lobatis gaudet, dein cum flores apetalos profert, folia iterum integra habet. LeConte, *loc. cit.* 139.

The seven species of the *palmata* group that have only uncut leaves call for no special discussion in the present paper, as most of them have been considered elsewhere.* But I wish to record an interesting extension of range for *Viola latiuscula*. Mr. B. H. Slavin, of the Park Department of the city of Rochester, has found the species widely distributed in western New York; it has turned up not only at several stations in the vicinity of Rochester, but in three other counties—at Portage, Falconer, and Olean, and even across the state line at Bradford, Pennsylvania.

The general conclusions of the present discussion may be presented in the following

**Synopsis of Viola palmata and allied species**

Leaves all palmately 5–11-lobed or -parted, or rarely the first leaf of spring uncut.
- Plants villous-pubescent, seeds brown. — *V. palmata.*
- Plants nearly or quite glabrous.
  - Leaf segments closely crenate-serrate, seeds brown. — *V. Egglestonii.*
  - Leaf segments remotely crenate-serrate, seeds buff. — *V. Stoneana.*

Earliest and latest leaves usually uncut, others pedately 3–7-lobed, -parted, or -divided, seeds generally buff.
- Plants villous-pubescent.
  - Cut leaves mostly 3-lobed, with broadly open sinus. — *V. triloba.*
  - Cut leaves mostly 5–7-parted, with narrow sinus. — *V. triloba*, var. *dilatata.*
- Plants obscurely pubescent and glabrate, flowers deep violet; of shady uplands. — *V. Lovelliana.*
- Plants glabrous, flowers pale violet; of wet woods. — *V. esculenta.*

Leaves all uncut.
- Plants nearly or quite glabrous.
  - Flowers violet-purple, seeds brown.
    - Petioles smooth; plants of moist soil. — *V. papilionacea.*
    - Petioles glandular-roughened; plants of dry soil. — *V. latiuscula.*
  - Flowers rose-purple, seeds buff. — *V. rosacea.*
  - Flowers pale violet or white, seeds buff.
    - Vernal leaves narrow, gradually attenuate. — *V. missouriensis.*
    - Vernal leaves broad, subcordate. — *V. floridana.*
- Plants villous-pubescent, especially on petiole and lower leaf-surface, seeds dark brown. — *V. sororia.*
- Plants hirsutulous on upper leaf-surface, elsewhere glabrous, seeds buff. — *V. hirsutula.*

MIDDLEBURY, VERMONT.

**Explanation of plate 36. All ×⅔.**

A. *Viola triloba* Schwein., var. *dilatata* (Ell.) Brainerd. Mansfield, La., March 28, 1910. B. Single pedately divided leaf, from *Eggleston 4506*, Kuttawa, Ky., June 3–17, 1899. C. Ripe capsules from cleistogamous flowers, ex horto, Middlebury, Vt., transplanted from Mansfield, La., March, 1910.

*See Rhodora **9**: 93–98. 1907; also Bull. Torrey Club **37**: 524, 525. 1910.

# Notes on the distribution of some plants observed in traveling through the coastal plain from Georgia to New York in July, 1909

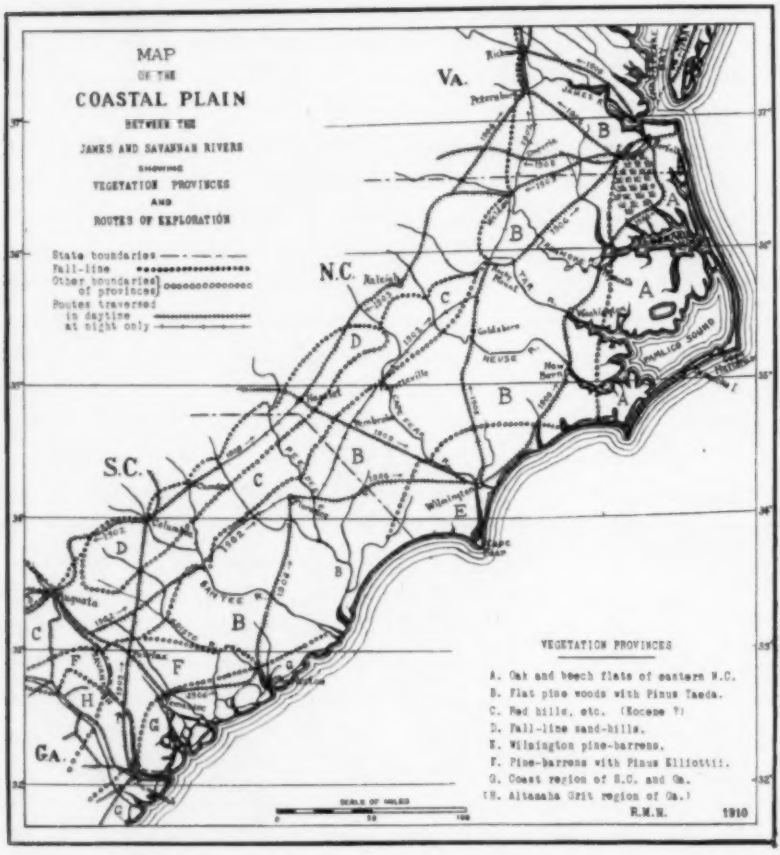
ROLAND M. HARPER

On my way northward through the coastal plain in the latter part of July, 1909, by the route described in the August number of the BULLETIN, and shown in part on the accompanying map, I noted nearly 250 species of plants, as any other traveler familiar with the flora could have done under similar circumstances. On comparing my notes afterward with statements in botanical literature relating to the regions traversed, I found, as often happens, that I had some facts not generally known, and therefore worth mentioning, about the distribution of some of the species. Some of the simpler or less important cases have already been mentioned briefly under the several natural geographical divisions, or vegetation provinces, described in my previous paper, while those of special interest will be treated more fully here.*

In the present paper I wish to call special attention to several species of plants which, although they have been credited to Virginia by many authors, have not been seen in that state recently, if at all. None of these species whose status in the "Manual region" is now questioned were known in Clayton's time (the first half of the eighteenth century), so that his "Flora Virginica," which is believed to be based on a large amount of field work in the coastal plain of Virginia, throws no light on the subject. All but two were known to Michaux, but his "Flora Boreali-Americana" (1803) does not assign to any of them ranges extending farther north than North Carolina. All but one or two began to be credited to Virginia in the first half of the nineteenth century, and have been given a place in most floras covering the northeastern United States, up to and including the latest, that of

*In discussing the distribution of these plants I shall make frequent references to the notes of my previous trips—particularly that of 1906—through the same general region, as well as to previous literature which I have cited elsewhere.

Robinson and Fernald (the so-called 7th edition of Gray's Manual, 1908). But none of them were found north of the Virginia-North Carolina boundary (latitude 36° 30′) by Chickering, Ward, McCarthy, Hollick, Heller, Pollard, or Kearney,* all of whom have




done considerable work in southeastern Virginia in the last quarter of the nineteenth century, and published their observations. The alleged occurrence of such plants in the "Manual region" therefore deserves careful investigation.

Dr. Gray in 1856 (Am. Jour. Sci. **72**: 205) published an interesting list of 38 plants which he said would be excluded from

*For citations of their papers see the bibliography in Kearney's Dismal Swamp report (Contr. U. S. Nat. Herb. **5**: 547–550. 1901), and the footnotes in my account of my 1906 trip.

his Manual if the southern boundary of his territory, instead of following the parallel of 36° 30′ all the way to the coast, turned northward in the longitude of Washington (77° W.) to the James River, and thence eastward to the coast; which would cut out an area about 50 miles square. This list of Dr. Gray's includes a few of the species now under consideration, but naturally does not give the evidence on which they were admitted to the flora of Virginia.

In the following pages I shall have occasion to refer several times to Mr. Kearney's table of the northern limits of nearly 500 "austroriparian" (*i. e.*, coastal plain) plants, published in his report on Dismal Swamp (Contr. U. S. Nat. Herb. **5**: 450–457) in 1901, and shall not give the full citation each time. Although considerably less was known about the details of plant distribution in the southeastern states at that time than now, this was an excellent piece of work for its time, and it deserves to be extended and brought up to date.

With very few exceptions all species of plants which reach their northern limits in any of the Atlantic states from New Jersey southward (excluding of course the local species of the southern Appalachian region) seem to be confined to the coastal plain in the northernmost state in which they are found.* As a rule such species seem to have their extreme northern outposts within a few miles of the coast, except in Virginia and northeastern North Carolina, where there are more southern plants west of Dismal Swamp than east of it, as I have previously intimated.† The reason for all this is not very plain, but an understanding of it is perhaps not essential for present purposes.

SENECIO TOMENTOSUS Michx.

As in former years,‡ I saw this only within about fifty miles of Dismal Swamp, along railroads and in old fields and pastures. This time I noticed it only in North Carolina, first in Washington County, about 9 miles south of Plymouth, and last in Currituck County.

*See Shreve, Plant Life of Maryland, 69–72, 76–85, 90, 94. 1910.

†Torreya **9**: 225. 1909; Bull. Torrey Club **37**: 420. 1910.

‡See Bull. Torrey Club **34**: 367, 368. 1907; Torreya **9**: 224. 1909.

MARSHALLIA GRAMINIFOLIA (Walt.) Small.

Seen 15 times in Robeson and Bladen counties, North Carolina, between Allenton and Armour, a distance of about 40 miles. Usually in low pine-barrens, around pocosins, etc. This seems to be just about its northern limit, according to Kearney. In 1906 I saw it in a few places in South Carolina north of the Santee River, and in this southern corner of North Carolina. The only North Carolina specimens cited by Beadle and Boynton in their monograph of the genus* are from "Wilmington."

BALDWINIA UNIFLORA Nutt.

Noted only between Lumberton and Allenton, Robeson County, North Carolina. Perhaps a little later in the season it would have been more conspicuous, and recognized oftener. Nuttall in the original description gave its range as "Virginia to Florida," and most subsequent works that mention it have accepted this statement, except Chapman, who gave its northern limit as North Carolina, Gray† and Small, who exclude it even from North Carolina, and Kearney, who places its northern limit at lat. 34°, which is south of Wilmington. Croom did not find it in the vicinity of New Bern, and Wood and McCarthy in their flora of Wilmington and vicinity credit it only to Brunswick County.

PLUCHEA IMBRICATA (Kearney) Nash.

Seen three times in Effingham County, Georgia, and once about a mile north of Fairfax, South Carolina, which is probably its northern limit. It was not previously known northeast of Tattnall County, Georgia.‡

TRILISA ODORATISSIMA (Walt.) Cass.

Common nearly all the way from Wilmington to Verona, North Carolina, but not seen elsewhere northeast of Georgia. (In 1906 I did not recognize it in the Carolinas at all; but it is not as easily recognized in July as it is several weeks later.) This was credited to Virginia by Nuttall, and nearly all descriptive floras covering that part of the country since his time have followed him. But

*Biltmore Bot. Stud. 1: 4. 1901.

†Syn. Fl. N. A. 1$^2$: 302. 1884. This species is mentioned, however, in all editions of Gray's Manual except the first.

‡See Ann. N. Y. Acad. Sci. 17: 142. 1906, for details of range and habitat.

Croom in his flora of New Bern and vicinity, published in 1837, stated distinctly that he had not seen it farther north than the counties of Carteret and Onslow. (It was in Onslow County that I last saw it.) And Kearney places its northern limit still farther south.

SABBATIA DECANDRA (Walt.) Harper.

In pine-barren ponds between Garnett and Scotia, Luray and Gifford, in Hampton County, South Carolina. Walter's original specimens presumably came from South Carolina, but no 19th century botanist seems to have seen it northeast of the Canoochee River.* Nearly all the existing herbarium specimens are from Florida.

POLYCODIUM CAESIUM Greene, Pittonia **3**: 325. 1898.

On the fall-line sand-hills of Orangeburg, Lexington, and Richland counties, South Carolina.

OXYDENDRON ARBOREUM (L.) DC.

On this trip seen first near Verona, North Carolina (very common between there and New Bern), and last about three miles east of Williamsburg, Virginia. Three years before, I saw it only between Tarboro, N. C., and Windsor, Va., a still smaller range.

DAUCUS CAROTA L.

Noticed first at Elizabeth City, North Carolina, and then nearly everywhere north of there. The "carrot weed" reported from Wayne, Greene, Craven, Martin, and Chowan counties in Kerr's report on the cotton production of North Carolina (Tenth Census, vol. 6, 1884) may be the same thing. In Georgia it is common enough in some parts of the Piedmont region, but I do not remember seeing it in the coastal plain. Some interesting notes on the distribution of this European weed in the eastern United States were published several years ago by L. H. Dewey.†

OXYPOLIS FILIFORMIS (Walt.) Britton.

Common in shallow ponds in Hampton County, South Carolina, and in moist pine-barrens in the eastern part of Bladen County, North Carolina. This species has long been credited to Virginia, apparently on no other evidence than a very poor speci-

*See Ann. N. Y. Acad. Sci. **17**: 177. 1906.

†Yearbook U. S. Dept. Agric. **1896**: 280, 282. 1897.

men from Harper's Ferry (which is not only among the mountains, but about 300 miles farther north than any living botanist has seen this characteristic pine-barren plant); but I have recently shown* that the mountain plant belongs to a different genus.

Croom did not find *O. filiformis* in the vicinity of New Bern, Kearney does not mention it at all in his Dismal Swamp report, and all the specimens cited in Coulter & Rose's latest monograph† are from Florida and Mississippi. In 1906 I did not see it north of Williamsburg County, South Carolina.

NYSSA UNIFLORA Wang.

Last seen in Virginia, in swamps of the Chickahominy River about 18 miles east of Richmond, between the stations of Providence Forge and Elko, with *Taxodium distichum* as usual. I have found no record of any other station for it north of the James River.

RHEXIA ALIFANUS Walt. (See Bull. Torrey Club 33: 238. 1906.)

Common in moist pine-barrens; last seen in Washington County, North Carolina, about 13 miles south of Plymouth. Kearney puts its northern limit at lat. 35°, about 50 miles farther south.

GORDONIA LASIANTHUS L.

First seen (after leaving Georgia) about ten miles W.N.W. of Wilmington, and last about five miles S.S.E. of Washington, in Beaufort County, North Carolina. Three years before, I identified it with certainty only in Duplin County, in the same state.‡ This handsome tree seems to have been credited to Virginia first by Pursh and later by nearly every subsequent monographer, but this is probably a mistake. Kearney places its northern limit at latitude 34°, and it does not seem to be mentioned in any of the other papers on the Dismal Swamp region cited in his report.

CYRILLA RACEMIFLORA L.

Seen only in North Carolina (as in 1906), first near Hamlet, and last about 9 miles south of Plymouth. My 1906 notes placed it within still smaller limits.§

*Torreya **10**: 237–239. N 1910.

†Contr. U. S. Nat. Herb. **7**: 193. 1900.

‡See Bull. Torrey Club **34**: 369. 1907.

§See Bull. Torrey Club **34**: 370. 1907.

EUPHORBIA ERIOGONOIDES Small.

In 1906 I found this in sand along a railroad near Florence, South Carolina,* and three years later, almost to the hour, I found it in similar situations about 50 miles due north, near Hamlet, North Carolina, which is another state for it.

STILLINGIA AQUATICA Chapm.

In a pine-barren pond just north of Luray, Hampton County, South Carolina. Although this was credited to South Carolina (exact locality not specified) by its author, I have never seen it mentioned in local floras of that state (there have been very few published, though, since this species was described, half a century ago), or even seen a specimen from there. This is therefore probably the first definite record for it in South Carolina, as well as its northernmost known station. As in the case of *Pluchea imbricata* and *Sabbatia decandra*, I had not previously seen it northeast of Tattnall County, Georgia.

POLYGALA CYMOSA Walt.

Common in ponds in Hampton County, South Carolina, and seen twice in Bladen County, North Carolina, somewhat like *Oxypolis filiformis* (see above). I did not see it north of Wilmington in previous years, and Kearney did not find it in the Dismal Swamp region. There must be a considerable gap in its range between North Carolina and Delaware, somewhat like that between the *Oxypolis filiformis* and its variety *Canbyi*.

POLYGALA LUTEA L.

As in 1906, I found no trace of this in South Carolina. I noticed it first near Hamlet, and commonest between Wilmington and Verona, and New Bern and Mackey's Ferry.

AMORPHA HERBACEA Walt.

Both in 1906 and 1909 I saw this only in dry pine-barrens in the Cape Fear region. It grows in Georgia, but is probably rare in South Carolina.

CYTISUS SCOPARIUS (L.) Link.

I saw this several times on the railroad right-of-way on the Yorktown peninsula of Virginia, but as I did not then realize what it was (never having seen it before), I could not very well

*See Bull. Torrey Club **34**: 370. 1907.

note the exact localities. Mr. E. W. Berry tells me that he has found it abundant around Yorktown, where there is a tradition that it was introduced at the time of the Revolution by Cornwallis's soldiers. Dr. M. A. Chrysler* reports it as abundant near Annapolis, Maryland.

The last two editions of Gray's Manual credit this species to Virginia "and southward"; but it is not mentioned in Small's Flora of the Southeastern U. S., or even in Kearney's Dismal Swamp report.

SARRACENIA FLAVA L.

Seen about 75 times between Hamlet and Plymouth, North Carolina, and nowhere else on this trip (somewhat like *Cyrilla* and *Polygala lutea*). Kearney found it only near New Bern (and placed its northern limit at latitude 35°); and it must be very rare north of the Roanoke River, like *Cyrilla* and several other species which have been seen only a few times in Virginia.

NYMPHAEA SAGITTIFOLIA Walt.

Common in four coffee-colored (not muddy) creeks or small rivers within twenty miles of each other, between Laurinburg and Lumberton, North Carolina. (I had seen it at the first three of these places while walking from Pembroke to Laurinburg in November, 1905.)† On Sept. 22, 1794, Michaux found what is probably the same species near Fayetteville,‡ as C. L. Boynton did over 100 years later.§ Elliott knew it only from the Peedee River, which may perhaps be the type-locality. Wood & McCarthy found it near Wilmington. In 1906 I saw it only in ditches in the northern corner of Horry County, South Carolina. All these localities are within 100 miles of each other.

I have seen what passes for the same thing in several creeks and rivers at sea-level in Santa Rosa County, Florida, but never in Georgia or Alabama. If the material from Indiana and Illinois which has been referred to this species is correctly identified it has a very peculiar distribution.

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*Plant Life of Maryland, 191, 445. 1910.

†See Torreya **6**: 43. 1906.

‡Journal of André Michaux, edited by C. S. Sargent.

§See Biltmore Bot. Stud. **1**: 148. 1902.

NYMPHAEA ADVENA Ait.

First seen in Swift Creek in the northern part of Craven County, North Carolina, which is perhaps as far south as it extends in the coastal plain. In 1906 I saw it only in ditches in the southeastern end of Halifax County, in the same state.

NELUMBO LUTEA (Willd.) Pers.

Grows in Aquia Creek and other estuaries of the Potomac River in Stafford and Prince William counties, Virginia. This is just about where Professor Ward saw it in 1885.*

PHORADENDRON FLAVESCENS (Pursh) Nutt.

Last seen near Northwest, Norfolk County, Virginia, on *Acer rubrum*. (Farther south it is oftener on *Nyssa biflora*.) In 1906 I saw it a little farther north, on the Blackwater River near Zuni.

ERIOGONUM TOMENTOSUM Michx.

Common on the fall-line sand-hills of South Carolina. Last seen in Kershaw County about 8 miles northeast of Camden.

PLANERA AQUATICA (Walt.) Gmel.

Seen this time only in the Savannah River bottoms, in Hampton County, South Carolina.

QUERCUS PALUSTRIS DuRoi.

First noticed in Caroline County, Virginia, a little south of Milford. This is the farthest south I have ever seen it.

QUERCUS PRINUS L.

Seen three times in the pine-barrens between Tom's River and Ocean Gate, New Jersey, where it had doubtless been observed by many other botanists before. I mention this here because very few other coastal plain stations for it are known. Long Island is in a certain sense nearly all coastal plain, but on that interesting island I have seen this oak only in the hilly northern or glaciated portions.† Dr. Shreve in his recent Plant Life of Maryland has reported it from a few counties in the upper part of the coastal plain of that state, and Mr. E. W. Berry tells me that he is sure he has seen it in the coastal plain of Virginia, but does not remember the exact locality. Pinchot & Ashe excluded

*Bot. Gaz. 11: 35. 1886.

†See Torreya 8: 156. 1908. Mr. E. P. Bicknell has since informed me that he knows of a station for it near Woodmere, in the flat part of the island.

it from the coastal plain in North Carolina, and Elliott likewise in South Carolina. In Georgia I have not seen it within twenty miles of the fall-line,* and Dr. Mohr could have said the same thing about its occurrence in his state, judging from the map which forms the frontispiece of his well-known Plant Life of Alabama. But in the fall of 1908 I found it in ravines near Havana, Hale County, Alabama (in the Cretaceous region of the coastal plain), and Dr. Hilgard found it over half a century ago on high rocky ridges in Tippah County, Mississippi,† which is likewise in the Cretaceous region.

MYRICA CERIFERA L.

Last seen near Providence Forge, New Kent County, Virginia, about 25 miles east of Richmond. In 1906 I last saw it about 45 miles, and in 1908 about 10 miles,‡ from the fall-line, in the same state.

MYRICA PUMILA (Michx.) Small.

Common in dry pine-barrens between Wilmington and Verona, North Carolina, and seen once in Washington County, about 12 miles south of Plymouth.

NOLINA GEORGIANA Michx.

Occasional on the fall-line sand-hills of South Carolina; seen once in the upper edge of Orangeburg County and twice in Kershaw County. Elliott knew it only from "the driest sand hills, between Orangeburgh and Columbia."

LILIUM CATESBAEI Walt.

Last seen near a pocosin between Kellum and Deppe, Onslow County, North Carolina (and in 1906 just about the same distance north of Wilmington, both stations being in the *Pinus Taeda* region). Kearney places its northern limit about one degree farther south.

ZYGADENUS GLABERRIMUS Michx.

Last seen in Beaufort County, North Carolina, five or six miles south of Washington. In 1906 I did not see it north of Burgaw, Pender County, but Kearney places its northern limit

*See Southern Woodlands 2: 96, 97. 1908.

†Geology and Agriculture of Mississippi, 266. 1860.

‡See Torreya 9: 225. 1909.

still farther north (36°), and Pursh and several subsequent authors have assigned it a place in the flora of the northern United States.

ORONTIUM AQUATICUM L.

Seen just east of Hamlet and Laurinburg, North Carolina, and Tom's River, New Jersey. At the first- and last-named localities it was accompanied by *Chamaecyparis*.

RYNCHOSPORA INEXPANSA (Michx.) Vahl.

Common along the railroad between New Bern and Norfolk, often with *Senecio tomentosus* and equally weed-like. In 1906 I saw it in similar places in Gates County, North Carolina, and in 1908 at various places between Norfolk and Emporia, Virginia. This species has perhaps never been openly charged with "weediness" before, though I have known for years that it is usually a weed in Georgia. More information about its natural habitats (if it has any) would be welcome.

RYNCHOSPORA ALBA (L.) Vahl (or its var. *macra* Clarke?).

Very few stations for this in the South are known, so it may be worth mentioning that I found it in a sand-hill bog near Hamlet, N. C.

DICHROMENA LATIFOLIA Baldw.

Last seen at about the same place as *Lilium Catesbaei* (see above), which corresponds pretty closely with the northern limit assigned to it by Kearney. It was doubtfully reported from Virginia in the fifth edition of Gray's Manual, 1867, and has been generally regarded as a member of the northern flora ever since. More evidence on this point is desirable.

CAMPULOSUS AROMATICUS (Walt.) Trin.

Noted twice in Chatham County, Georgia, once near Hamlet, and once between Elkton and Rosindale, North Carolina. I saw it oftener in 1906, from about Chadbourn to Burgaw, in the last-named state, but not in South Carolina on either trip. It has been credited to Virginia by Pursh and many of his successors, but Kearney found it only near New Bern.

ARISTIDA STRICTA Michx.

After leaving Georgia I saw this very characteristic grass of dry pine-barrens (from which the "wire-grass country" of Georgia, Alabama, etc., takes its name) only between Hamlet and Ply-

mouth, North Carolina, like *Sarracenia flava* and several other plants. In 1906, too, I saw it only in the same state between Lake Waccamaw and the Neuse River.

Pursh reported this species from "shady rocky situations, on river sides: Virginia, Carolina, etc.," and on the strength of this reference it has found a place in most northern manuals, until Prof. A. S. Hitchcock, in elaborating the grasses for Robinson & Fernald's Manual, 1908, excluded it. Mr. Kearney found it only near New Bern, like the preceding.

It is possible however that this species has been misinterpreted, and that our familiar wire-grass is not Michaux's *Aristida stricta* at all. There are some serious discrepancies between the original description and the plant that now goes by that name, and the habitat assigned to it by Pursh is decidedly not that of the wire-grass. This is a matter that deserves investigation.

CHAMAECYPARIS THYOIDES (L.) BSP.

In 1906 I did not see this at all between Alabama and New York,* but last year I was more fortunate, having noted it once among the fall-line sand-hills of Kershaw County, South Carolina, (about 10 miles northeast of Camden), twice within five miles of Hamlet,† once in Beaufort County south of Washington, North Carolina, and several times in the pine-barrens of New Jersey.

TAXODIUM IMBRICARIUM (Nutt.) Harper (*T. adscendens* Brong.).

Last seen about nine miles south of Plymouth, N. C., like several other species already mentioned. The only place where I saw this in the fall-line sand-hill region was in the same bog with the *Chamaecyparis* just mentioned, which happens to be within a few miles of where Croom once found it.‡

TAXODIUM DISTICHUM (L.) Richard.

Last seen at the same place as *Nyssa uniflora*, along the Chickahominy River in Virginia. Its inland limit in the Middle Atlantic states seems to be very similar to that of *Myrica cerifera*.

PINUS VIRGINIANA Mill.

First seen in Warwick County, Virginia, about 6½ miles north-

*See Bull. Torrey Club **34**: 377. 1907.
†See Torreya **6**: 43. 1906.
‡See Am. Jour. Sci. **28**: 166. 1835.

west of Newport News. Frequent the rest of the way through Virginia and Maryland, and in the Cretaceous region of New Jersey.

PINUS GLABRA Walt.

Observed only in the Savannah River bottoms near Garnett, South Carolina; the first time I had seen it northeast of Georgia. Very few South Carolina stations for it are known to botanists now living. It is interesting to note that Michaux saw what is probably this species in the vicinity of Parker's Ferry on the Edisto on April 21, 1787, though it is not mentioned in his Flora Boreali-Americana.

PINUS SEROTINA Michx.

Common enough nearly everywhere south of Dismal Swamp, but seen only once in Virginia this time, that about two miles south of Fentress, Norfolk County.

PINUS TAEDA L.

Common in all the regions passed through, to a point in Caroline County, Virginia, about 69 miles south of Washington, D. C. (Prof. Ward, in traveling southward over approximately the same route 24 years earlier, first saw it a little farther north, and published some interesting notes on it the following year.*) It has been reported from the District of Columbia and even from West Virginia,† but it does not seem possible that it could be indigenous in those places, especially the last, for if it was, its inland limit would trend northwestward,‡ instead of northeastward like many other species in this latitude.

PINUS ELLIOTTII Engelm.

Last seen about three miles north of Sycamore, Barnwell County, South Carolina. There can be little doubt that this is its northern limit, or essentially so, for there is no tree whose range, in proportion to the area covered by it, is easier to map.§

COLLEGE POINT, NEW YORK.

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*Bot. Gaz. 11: 33. 34. 1886.

†See Millspaugh, W. Va. Exp. Sta. Bull. 24 (Fl. W. Va.) 475. 1892; Sudworth, U. S. Dept. Agr. Div. Forestry Bull. 17: 17. 1898.

‡See the map of its range in Mohr's "Timber pines of the Southern United States."

§I have seen it in nearly every county in which it grows, from South Carolina to Florida and Mississippi.

# The genus Usnea and its Linnaean nomenclature

R. Heber Howe, Jr.

When I published my paper on the North American Usneas (Bull. Torrey Club **37**: 1–18. 1910) the International Botanical Congress had not accepted Linnaeus' Species Plantarum of 1753 as a starting point for lichenological nomenclature. This adoption having been settled upon in May of the present year, it seems well worth while to fix the disposition of Linnaean names in this genus, in fact as soon as possible in all genera.

With the adoption of Species Plantarum is opened perhaps the necessity of referring to the Linnaean herbarium for type material, a matter needing a word of explanation. In 1886 Wainio (Meddel. Soc. Fauna et Flora Fenn. **14**: 1–10) published an account of the material found in the Linnaean herbarium,* showing that a large number of the lichen species were either not represented at all (45 out of 80) or were compositely shown by several species. It seems quite clear that although Linnaeus referred almost always (13 exceptions) to the figures and descriptions of Dillenius, yet in Linnaeus' own collection the species were poorly represented and authentic material rare. Crombie has given us a careful report on the Dillenian herbarium, in which he found a much greater percentage of species, properly represented and figured in the author's Historia Muscorum, than Wainio did in Linnaeus' collections and work. We must therefore not put too much weight on the supposed Linnaean "types," of which Linnaeus himself makes no definite mention,† but must take Linnaeus' original descriptions for what they are worth, and supplement them with

*To most of the specimens specific names had been ascribed by Linnaeus himself. The numbers of the same specimens, either alone or placed before the names, which were likewise written by Linnaeus himself, refer to his Species Plantarum (1753) and the numbers enclosed in parenthesis to Flora Sueccia. But to many specimens names were ascribed by authorities after Linnaeus' time, such as Smith, Dickson, Swartz. [Translation of a part of Wainio's preface.]

†"It has happened that I have come into possession of no slight collection." [Translation from preface of Tomus I.]

the Dillenian figures to which he refers, and the Dillenian specimens on which the figures were based. It seems to me clear that as Linnaeus made no definite mention of "types" the specimens preserved in his collection cannot constitute such in the strict sense of the word, but simply may be used when possible as confirmative evidence.

Linnaeus appears to have largely given the binomial nomenclature to the results of Dillenius' labor, though to Dillenius in his preface he gives faint praise.

No. 71, *Lichen plicatus*, being the first species of Linnaeus, now included in the genus (p. 1154) becomes, according to some botanists,* the "type" of the genus *Usnea* (Dill.) Adans. No number 71 was found by Wainio, but he states that no. 457 of Flora Lapponica, cited by Linnaeus in the Species Plantarum = "*Alectoria ochroleuca* (Ehrh.) Nyl. (=*rigida* Th. Fr., Lich. Scand. p. 19)—Ad hanc plantam igitur *Lichen plicatus* L., Spec. Plant. (1753) p. 1154 n. 71, spectat." Now in the Species Plantarum Linnaeus cites first no. 984 of the Flora Suecica and diagnoses it as follows: "filamentosus pendulus, ramis implexis, scutellis radiatis." These last words leave no doubt as to the plant described being an *Usnea* and not an *Alectoria*. Secondly, he cites no. 457 of the Flora Lapponica, an *Alectoria*, as above proven, and there is nothing in the description to imply otherwise. Thirdly, he cites Dillenius and his figure, which, as I have already pointed out (*loc. cit.*), is according to Crombie *Usnea ceratina* Ach. (Lich. Univ. 619. 1810) —the name of Acharius becoming a synonym of *plicata* as also noted. His fourth reference is to Bauhin, whose description is too indefinite for consideration.

From the above it would seem that with no definite "type" specimen in existence, with an absolutely diagnostic description standing first on the page, and with also a reference to a recognizable figure, based on an existing specimen, the species *Lichen plicatus* would properly remain an *Usnea*. The coarsest of the pendulous Usneas, later renamed *ceratina* by Acharius, must therefore stand today as *Usnea plicata* (L.) Web. The "type" locality is "Europae & Americae borealis." The fact that one of the refer-

*A code of botanical nomenclature. Bull. Torrey Club **31**: 249–261. 1904.

ences, the second, refers to an *Alectoria*, does not invalidate the name or embarrass the situation.

No. 72, *Lichen barbatus*, was found by Wainio to be represented in the Linnaean herbarium by a specimen referable to "*Usnea articulata* Hoffm." Hoffmann, however, himself referred* to Dillenius' figure (*pl. 11. f. 4*), which is of typical *articulata* as we now understand the species, and the one referred to by Linnaeus under the latter's *articulatus;* whereas Hoffmann under his own *barbata* referred to Dillenius' figure (*pl. 12. f. 6*), again following Linnaeus. There seems no doubt that Linnaeus' original description of the 1753 edition, copied from his Flora Suecica, no. 985,† did not refer to his no. 79, *Lichen articulatus*, of the 1753 work, and that we must turn to his Dillenian reference (the third) and leave it to the only plate cited to settle the question. This plate we have already found, was, according to Crombie, of an existing specimen referable to "*Usnea dasy*[*o*]*poga* (Ach.)" for which the name *barbata* must stand. The "type" locality given is also very significant. It has been my opinion that *Lichen barbatus* (= *Usnea barbata d. dasypoga* Fr.) represents a subspecific rather than a specific distinction, and I therefore proposed the combination *Usnea plicata barbata* (L.) R. H. Howe, Jr. No doubt some will prefer to claim for it specific rank, and for many nomenclatural reasons this would be the best elucidation.

No. 77, *Lichen hirtus*, Wainio tells us, has a composite representation in the Linnaean herbarium. He writes "77. *Lichen hirtus* (984) = *Usnea barbata* var. *glabrescens* Nyl. in Wainio, Lich. Vib. p. 46 (versus v. *dasypogam* Ach. vergens).—*L. hirtus* = 2 specim. *Usneae barbatae* var. *dasypogae* Ach.—77. = *Usn. barbata* var. *dasypoga* (Ach.) lusus." This would seem to argue that *Lichen hirtus* had better be considered a synonym of *Usnea barbata* rather than of *Usnea florida* as I heretofore referred it. There is little doubt, however, that Linnaeus' diagnostic word "erectus," and the Dillenian figures referred to, place *Lichen hirtus* as a synonym of *Usnea florida* (or vice versa), a name after all given only to the varying sterile conditions of the latter plant.

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*Deutschlands Flora 2: 133. 1795.

†*Patentissimis* of the Flora Suecica reads *patentibus* in Species Plantarum, 1753.

Whether the page priority of *hirtus* makes *floridus* rather a synonym of the former, reduces itself largely to the question of considering composite, uncited "types" of a pendulous character of greater value than the diagnoses and plate references. The page priority of *hirtus* over *floridus*, can, however, be waived on good grounds—first, perhaps, because of its composite representation already noted; secondly, because page priority was not accepted by the Brussels Congress; thirdly, because good sense allows and advises the holding (nomina conservanda) to names of long standing, this principle being eminently applicable here. In point of fact, among lichens no better case exists. Acharius in Lichenographiae Suecicae Prodromus of 1798 (224–5) combined them under *florida*. He writes:

"Hujus tantum varietas exscutellata est: *Lichen hirtus* Linn.," an absolutely true statement, and followed by an interesting explanation given below, the truth of which can be proved only by a long study of growing plants. The sterile plants, however, I believe rarely mature as described, their substrata and environs generally preventing a luxuriant development. "*L. hirtus* Linn. & Auctor. a *L. florido* in eo tantum differt, quod ille junior pallidior, glomerulis frequenter adspersus, magis ramosus, longius fibrillosus atque sterilis; hic autem per aetatem fere nigricans, crassior, rigidior minusque ramosus sit, & scutellis amplis radiosis instruatur."

No. 79, *Lichen articulatus*, Wainio did not find represented in the Linnaean herbarium, except as heretofore referred to under *Lichen barbatus*. As, however, Linnaeus' 1753 diagnosis is characteristic, and the plate reference and the Dillenian plant are well known, there seems no reason to disturb our present position in the absence of a Linnaean "type" specimen, particularly as a comparison of the given "type" localities is also a most convincing argument.

No. 80, *Lichen floridus*, is represented in the Linnaean herbarium, as would be expected, by a specimen of the sort known to Tuckerman as "*Usnea barbata* a. *florida* Fr. This case is clear and needs no further comment, except to recognize the present position of *Usnea florida* (L.) Web. as a species, and to hold to the advantage of nomina conservanda.

We therefore have the Linnaean nomenclature of *Usnea* as follows:

Genus: USNEA (Dill.) Adans.

Type species (if we recognize such): USNEA PLICATA (L.) Web.

Species: USNEA PLICATA (L.) Web.

USNEA BARBATA (L.) Web. or USNEA PLICATA BARBATA (L.) R. H. Howe, Jr.

USNEA ARTICULATA (L.) Hoffm.

USNEA FLORIDA (L.) Web.

Syn. *Lichen hirtus* L.

THOREAU MUSEUM,
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# INDEX TO AMERICAN BOTANICAL LITERATURE

## (1910)

The aim of this Index is to include all current botanical literature written by Americans, published in America, or based upon American material; the word America being used in its broadest sense.

Reviews, and papers which relate exclusively to forestry, agriculture, horticulture, manufactured products of vegetable origin, or laboratory methods are not included, and no attempt is made to index the literature of bacteriology. An occasional exception is made in favor of some paper appearing in an American periodical which is devoted wholly to botany. Reprints are not mentioned unless they differ from the original in some important particular. If users of the Index will call the attention of the editor to errors or omissions, their kindness will be appreciated.

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**Bailey, I. W.** Reversionary characters of traumatic oak woods. Bot. Gaz. **50**: 374–380. *pl. 11, 12.* 16 N 1910.

**Bean, W. J.** A visit to the Arnold Arboretum. Kew Bull. Misc. Inf. **1910**: 261–269. *pl. 1, 2.* 1910.

**Bessey, E. A.** Air drainage as affecting the acclimatization of plants. Mem. N. Y. Hort. Soc. **2**: 25–28. [N 1910.]

**Blodgett, F. H.** The origin and development of bulbs in the genus *Erythronium*. Bot. Gaz. **50**: 340–373. *f. 1–7 + pl. 8–10.* 16 N 1910.

**Blumer, J. C.** Mistletoe in the Southwest. Plant World **13**: 239–246. O 1910.

**Brainerd, E.** Five new species of *Viola* from the South. Bull. Torrey Club **37**: 523–528. *pl. 34, 35.* 30 N 1910.

**Britton, E. G.** *Splachnobryum* in greenhouses. Bryologist **13**: 116–119. *pl. 11.* N 1910.

**Britton, N. L.** Botanical exploration in western Cuba. Jour. N. Y. Bot. Gard. **11**: 226–236. *f. 28–35.* O 1910.

**Brown, W. H.** Evaporation and plant habitats in Jamaica. Plant World **13**: 268–272. N 1910.

**Calkins, W. W.** Mosses of Cook County, Illinois. Bryologist **13**: 107–111. N 1910.

**Cannon, W. A.** Travel notes: rural England. Plant World **13**: 259–266. N 1910.

**Clements, F. E.** The real factors in acclimatization. Mem. N. Y. Hort. Soc. **2**: 37–40. [N 1910.]

**Cockerell, T. D. A.** A fossil fig. Torreya **10**: 222–224. 27 O 1910. [Illust.]

*Ficus Bruesi* sp. nov.

**Coker, W. C.** Another new *Achlya*. Bot. Gaz. **50**: 381–383. *f. 1–8.* 16 N 1910.

*A. caroliniana* Coker.

**Crocker, W., Knight, L. L., & Roberts, E.** The peg of the *Cucurbitaceae*. Bot. Gaz. **50**: 321–339. *f. 1–6.* 16 N 1910.

**Dachnowski, A.** A cedar bog in central Ohio. Ohio Nat. **11**: 193–199. 21 N 1910.

**Deane, W.** *Pogonia trianthophora* in Holderness, New Hampshire. Rhodora **12**: 206. 1910.

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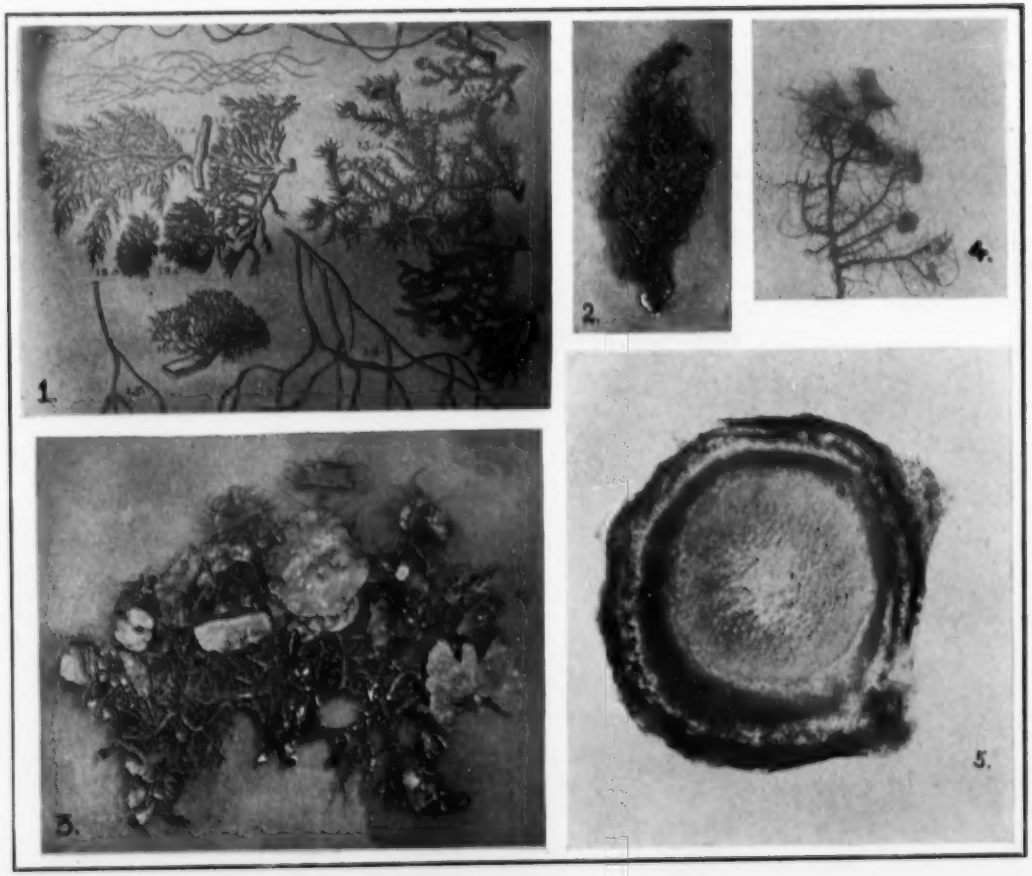


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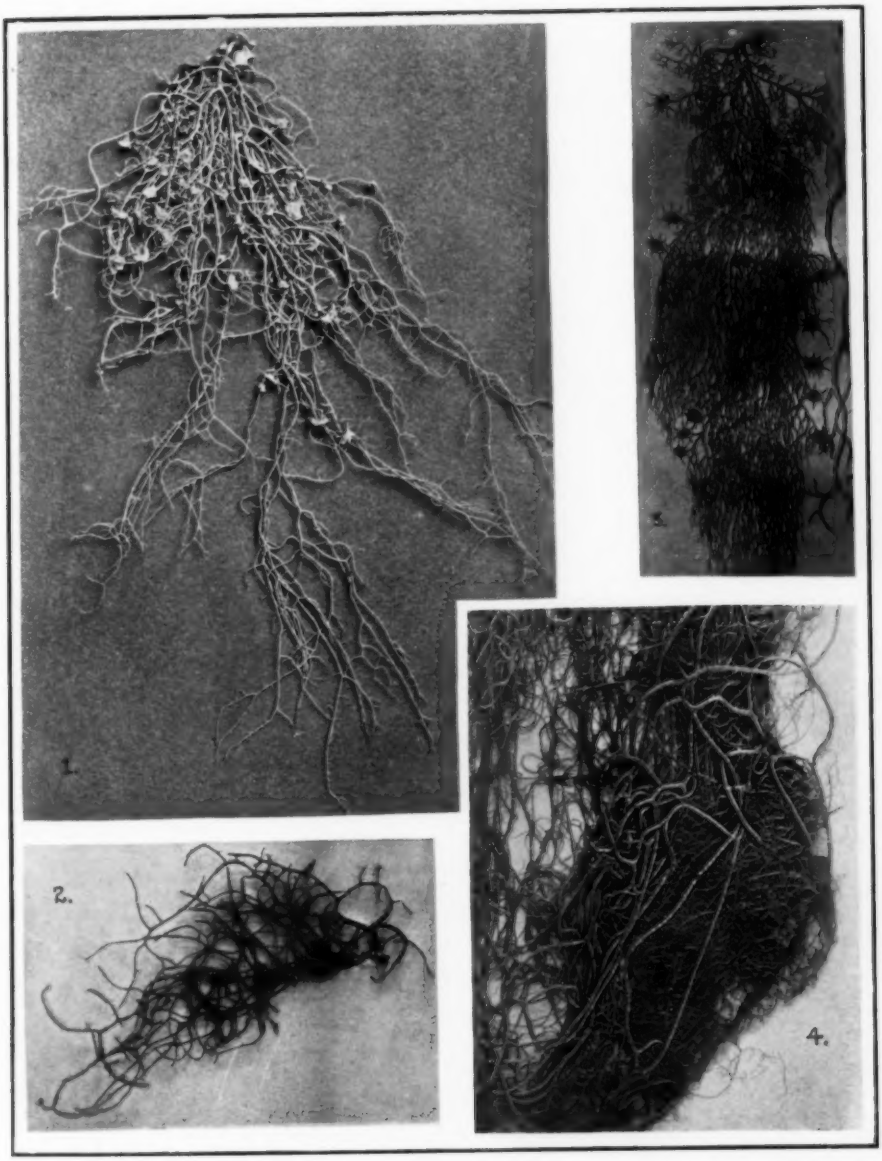


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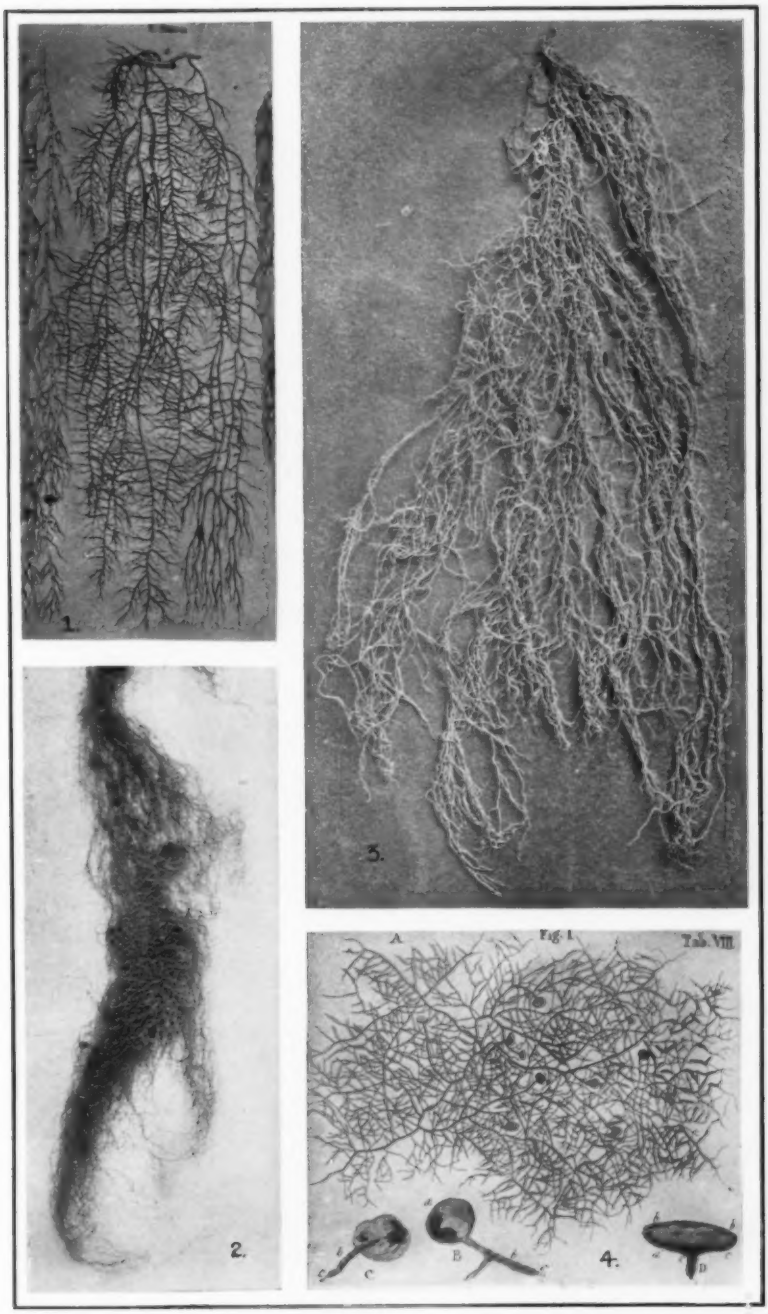


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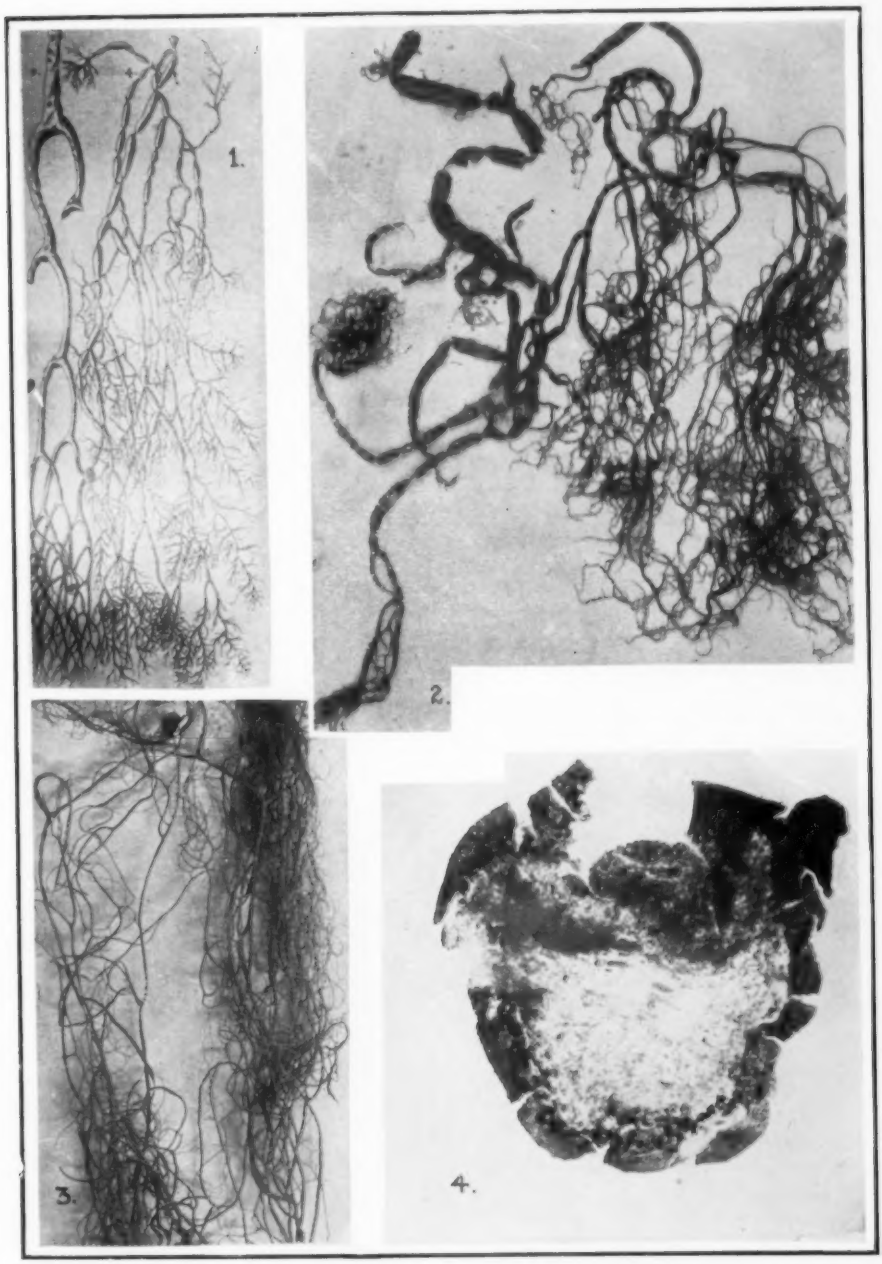


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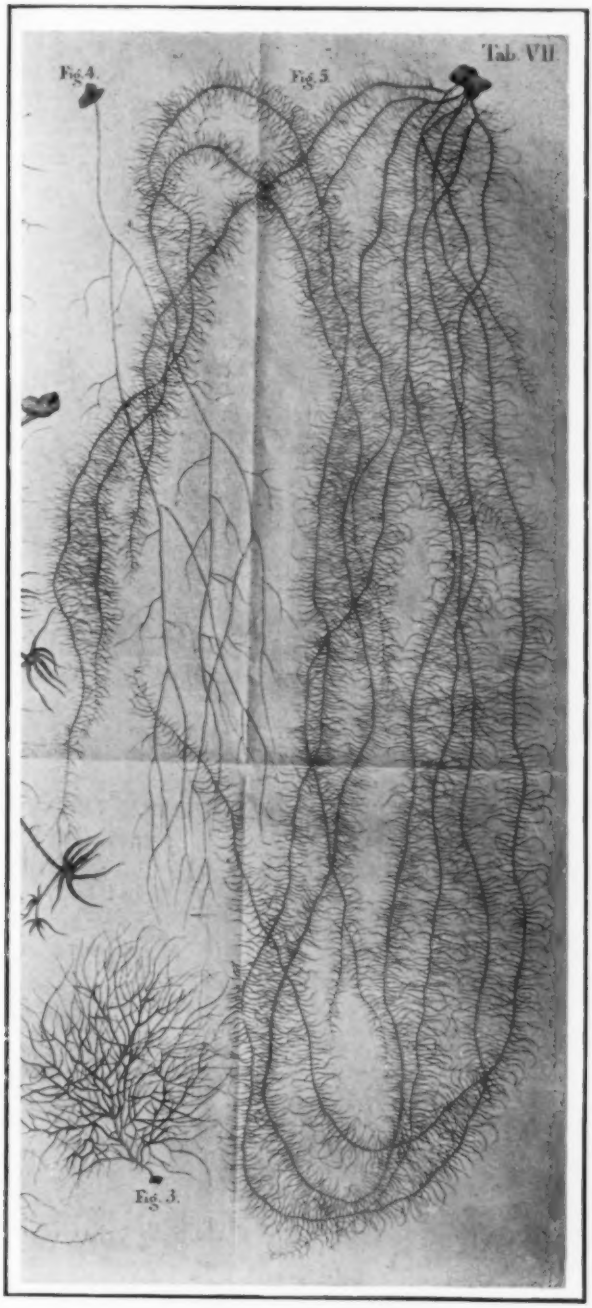
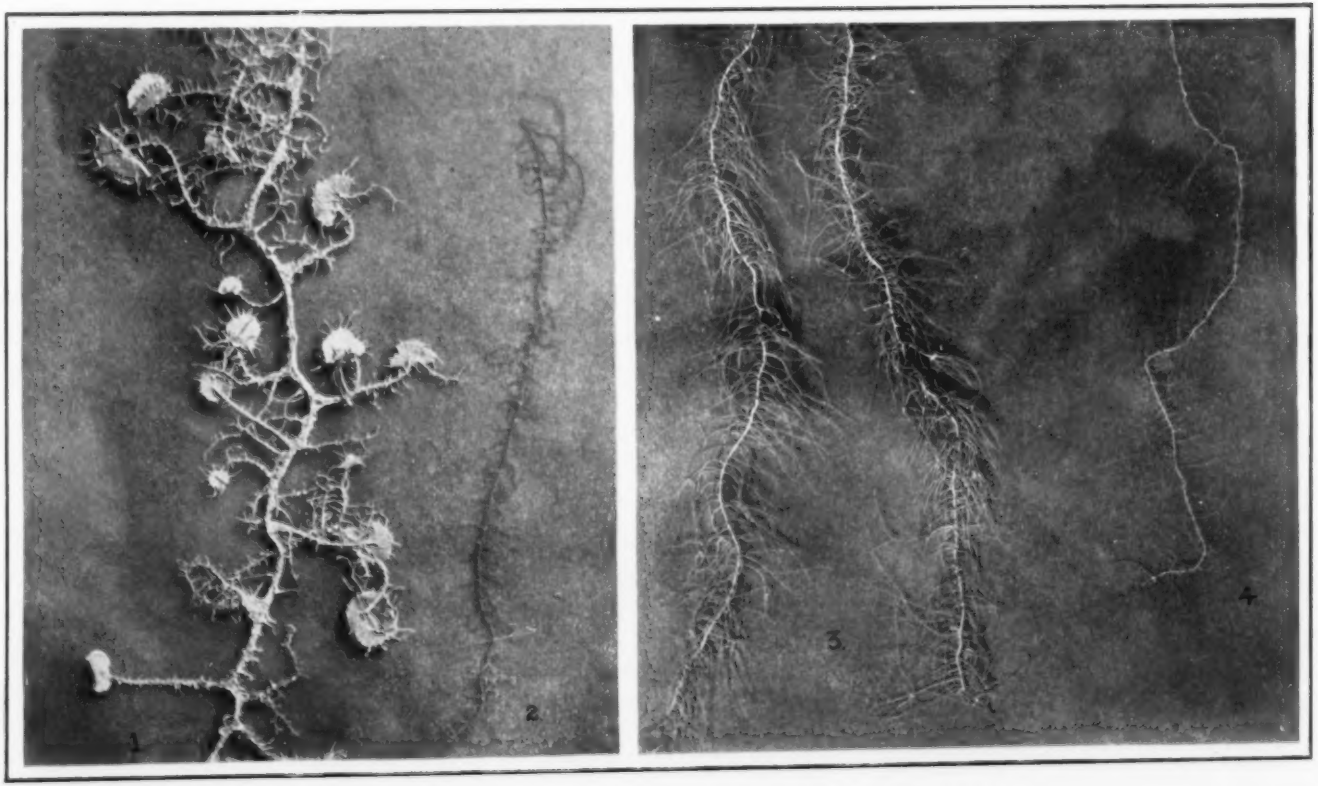
3, 4. USNEA CAVERNOSA TUCK.




USNEA LONGISSIMA ACH. (FIG. 5)

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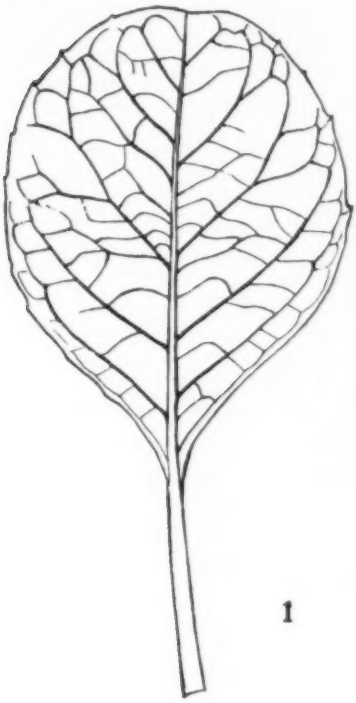

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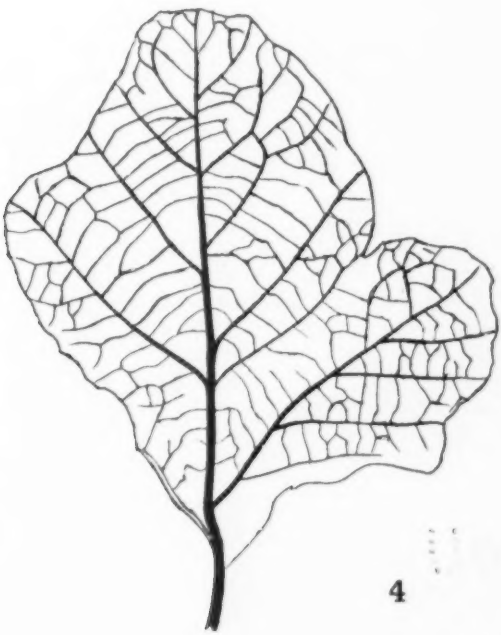
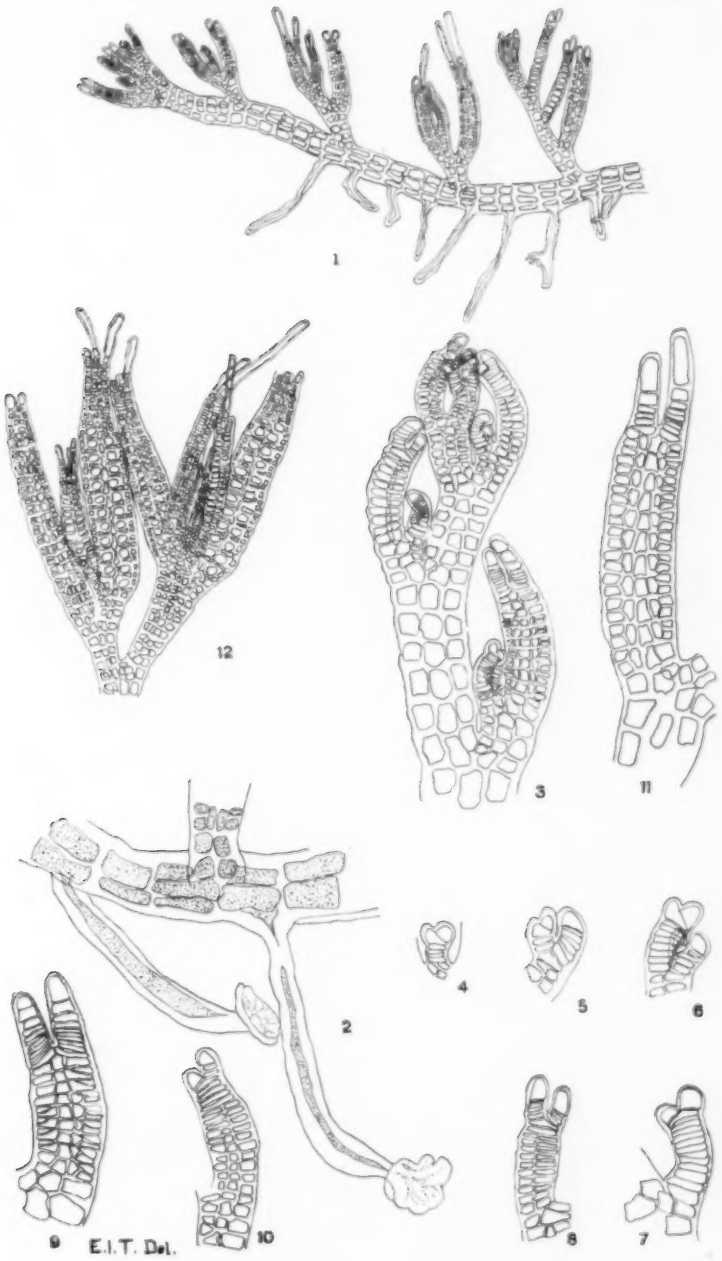


4

1. ELAEODENDRON MARYLANDICUM BERRY
2. HEDERA CECILENSIS BERRY
3. QUERCUS SEVERNENSIS BERRY
4. ARALIA WASHINGTONIANA BERRY.

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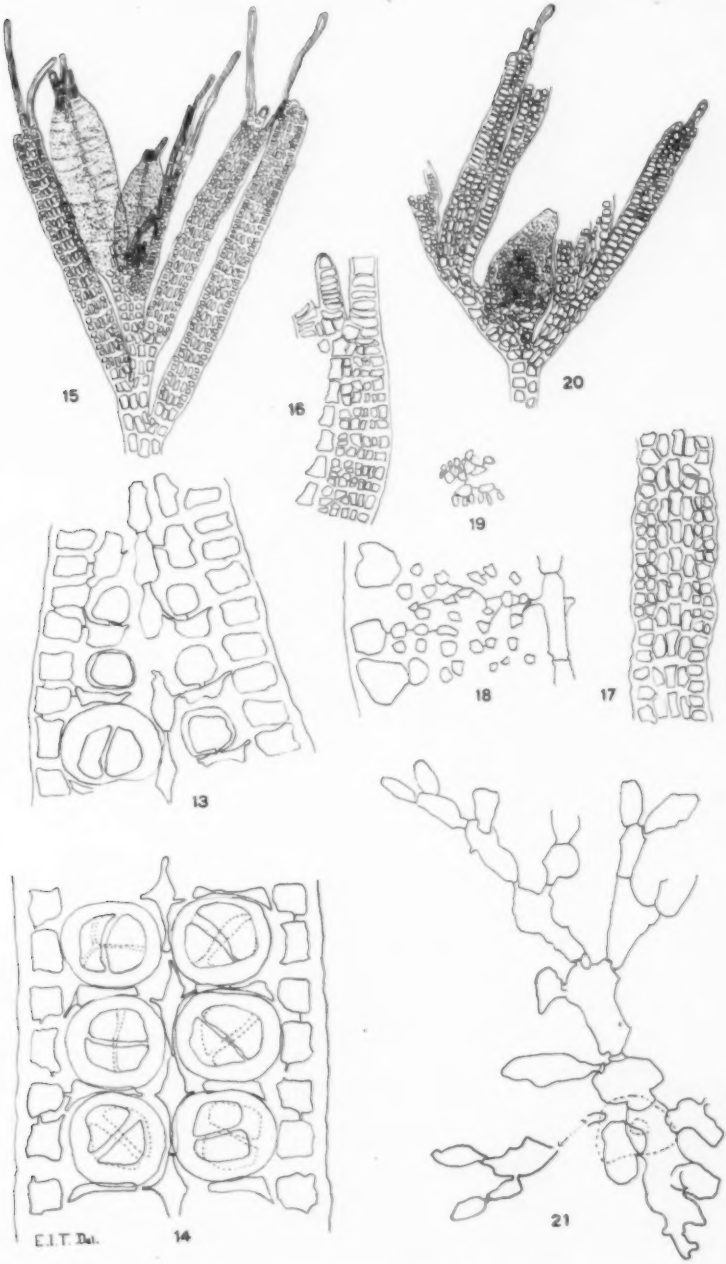



THOMPSON: MORPHOLOGY OF TAENIOMA

VIOLA AFFINIS × BRITTONIANA

VIOLA AFFINIS × FIMBRIATULA

VIOLA AFFINIS × PALMATA

VIOLA BRITTONIANA × PAPILIONACEA

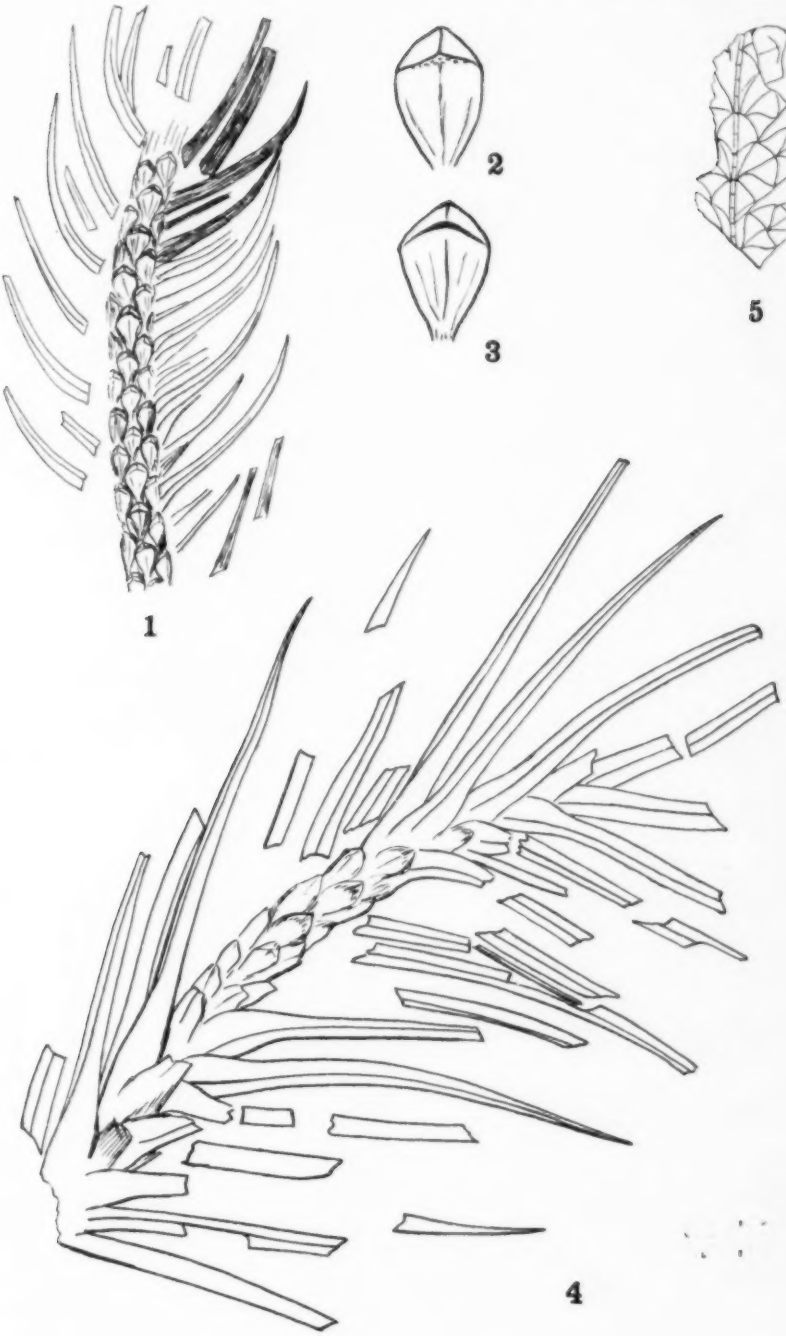
VIOLA FIMBRIATULA × HIRSUTULA

VIOLA HIRSUTULA × SORORIA

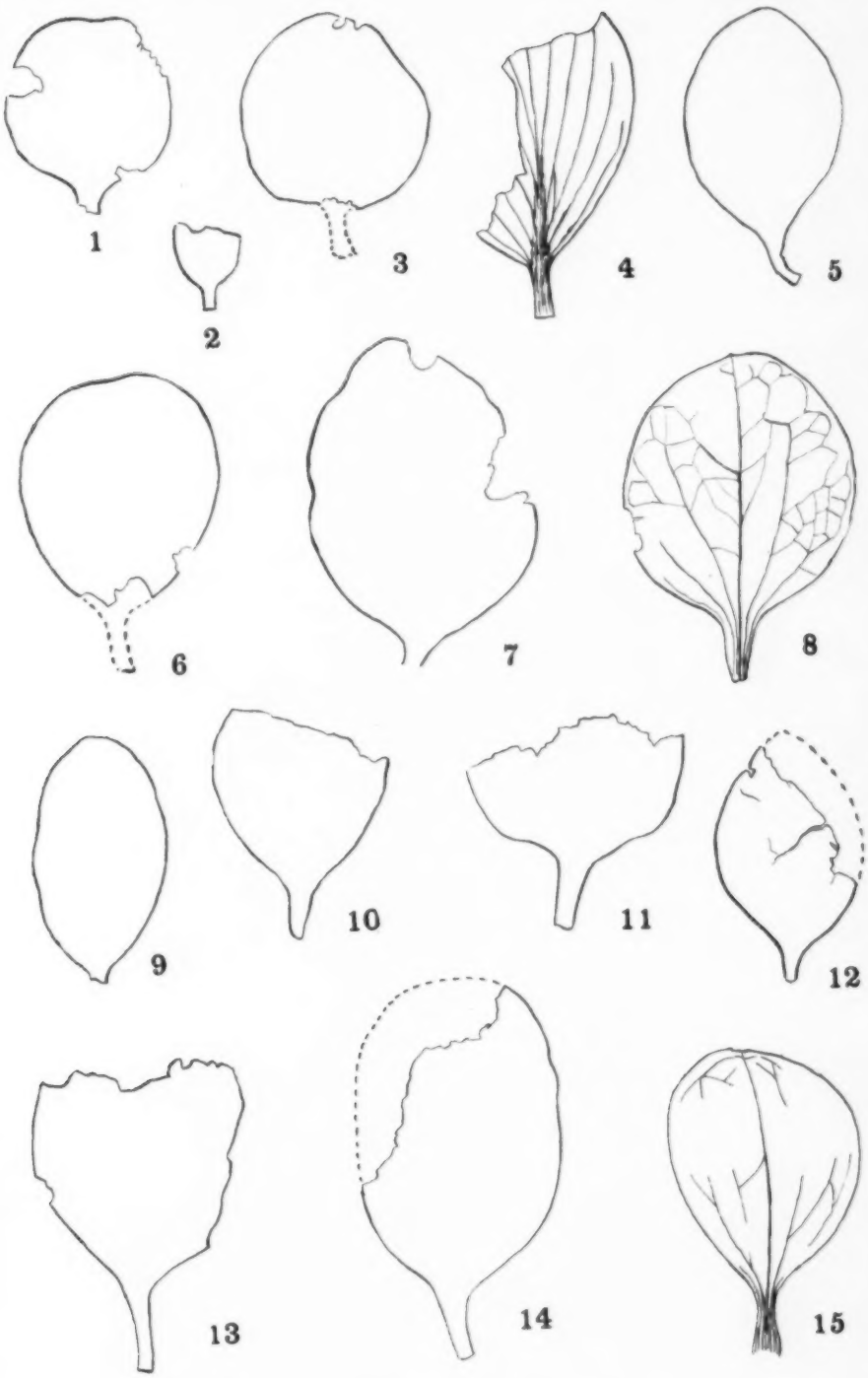
VIOLA LANCEOLATA × PRIMULIFOLIA

VIOLA PALLENS × PRIMULIFOLIA

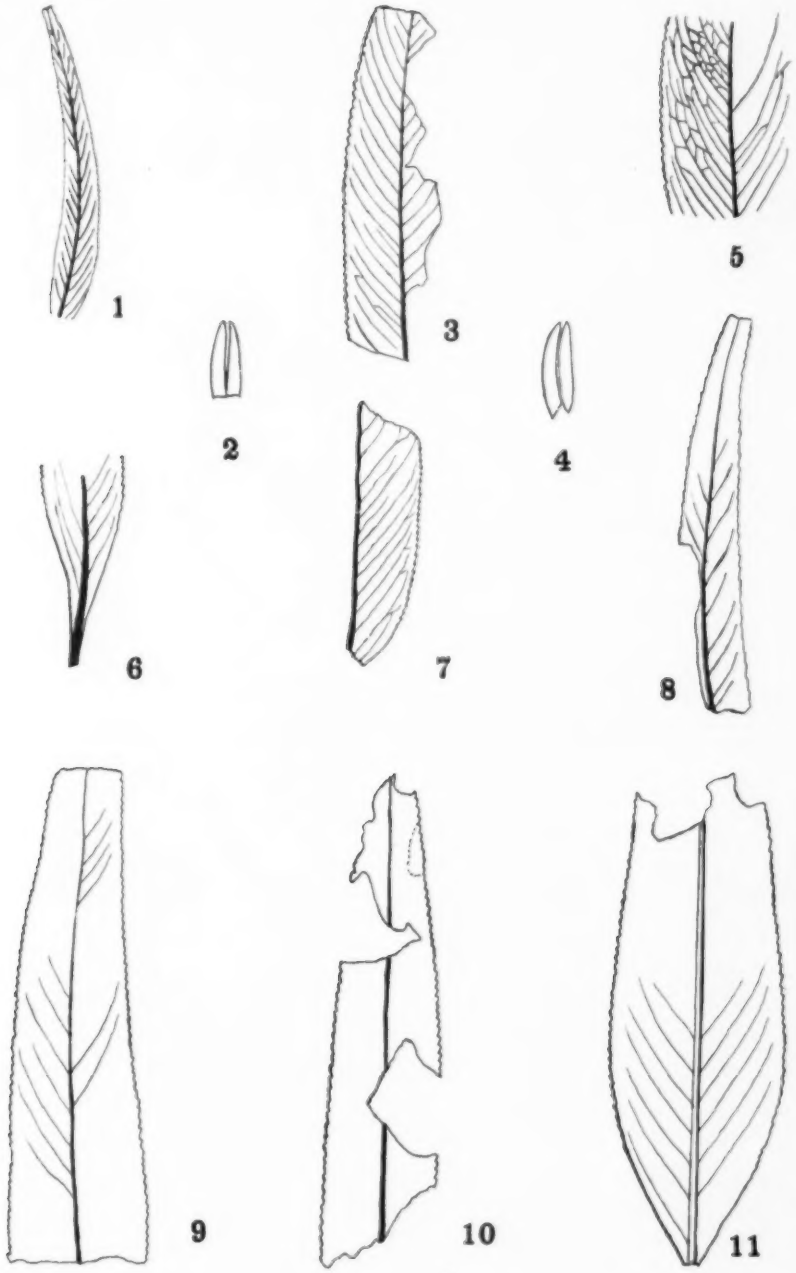
ANDROVETTIA CAROLINENSIS BERRY



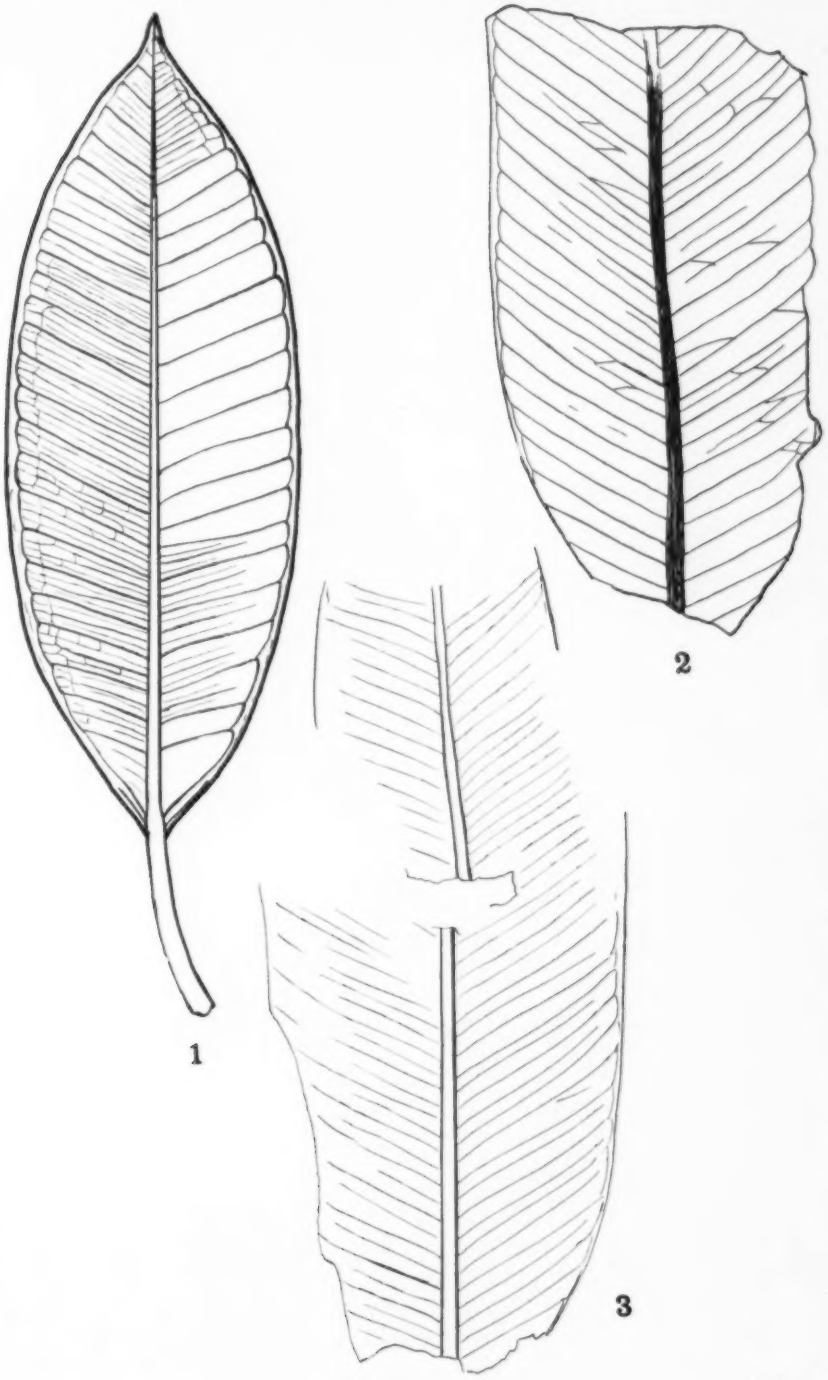

1–4. CUNNINGHAMITES ELEGANS (CORDA) ENDL.
5. MORICONIA AMERICANA BERRY




PISTIA NORDENSKIOLDI (HEER) BERRY




SALIX EUTAWENSIS BERRY




1. FICUS ELASTICA ROXB.
2, 3. FICUS STEPHENSONI BERRY

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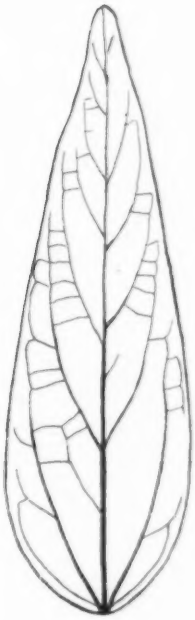

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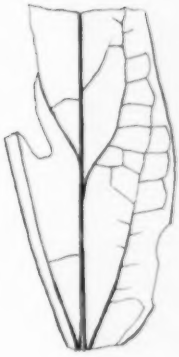

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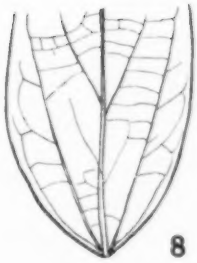

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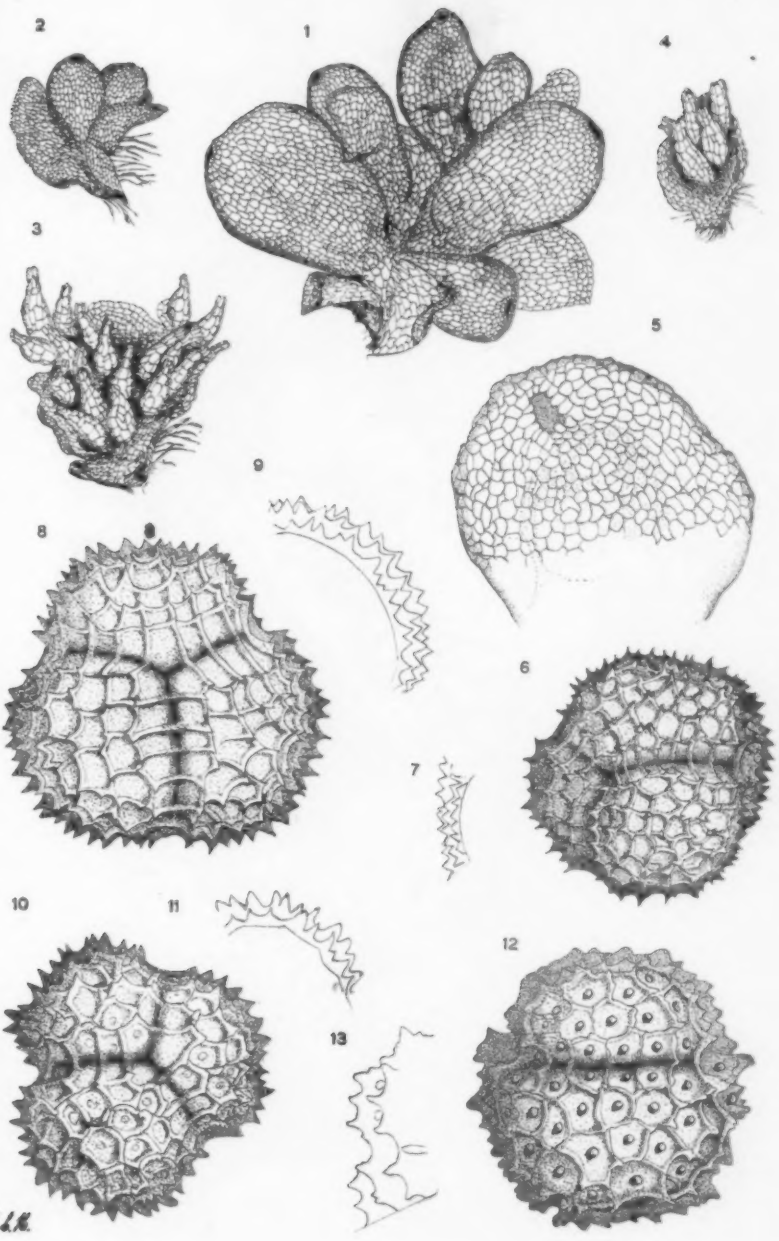
MALAPOENNA HORRELLENSIS BERRY

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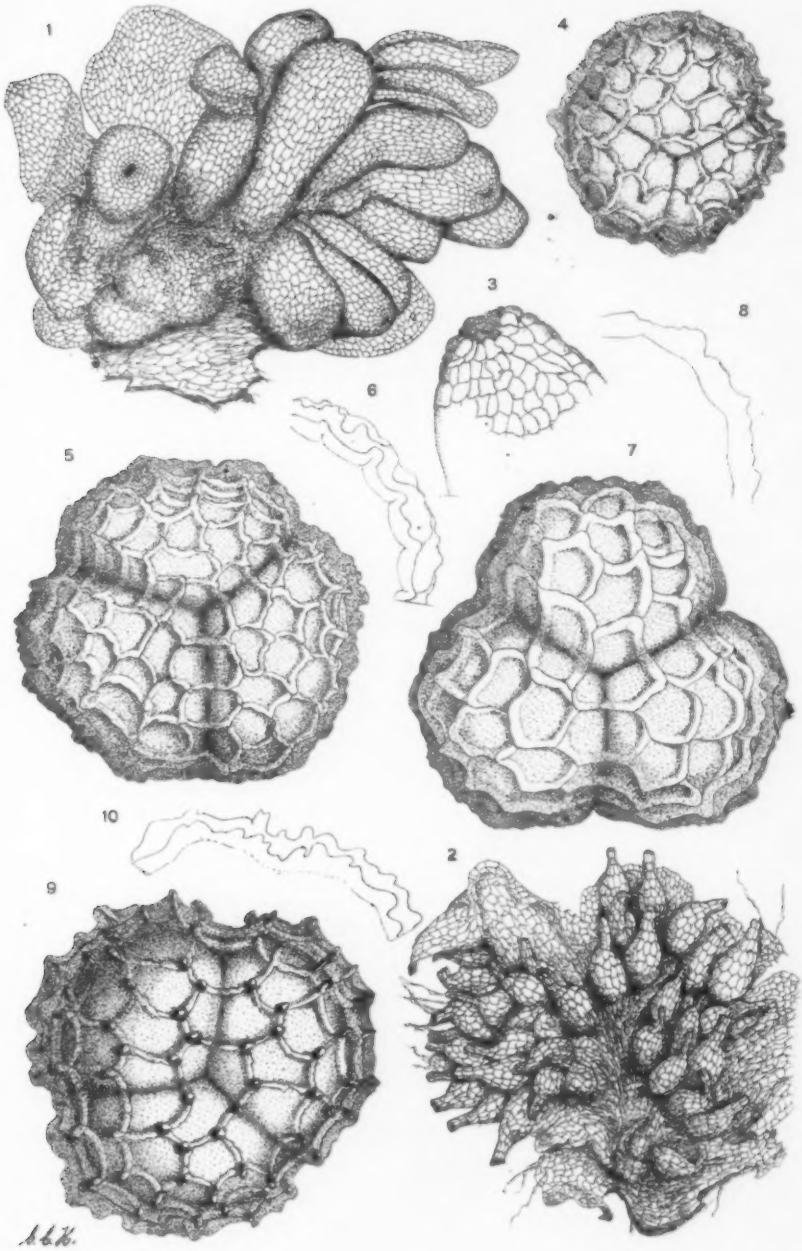


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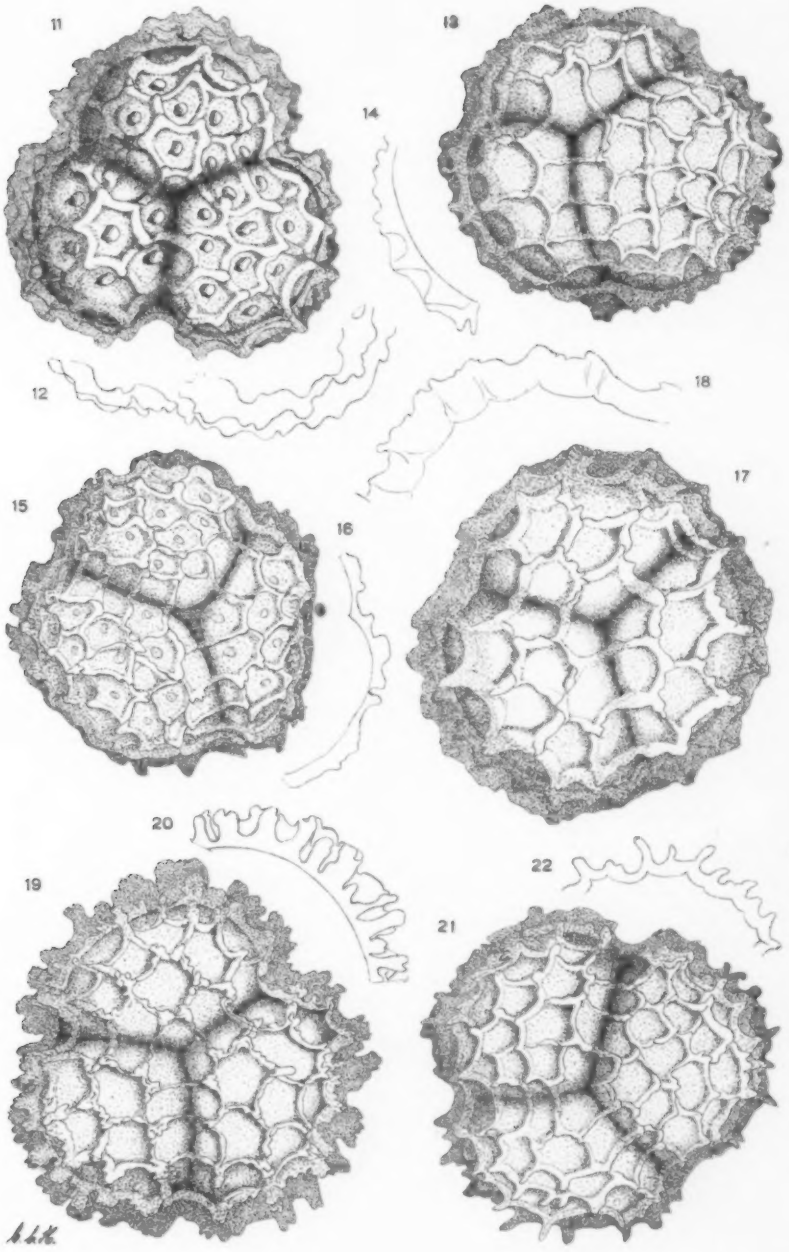


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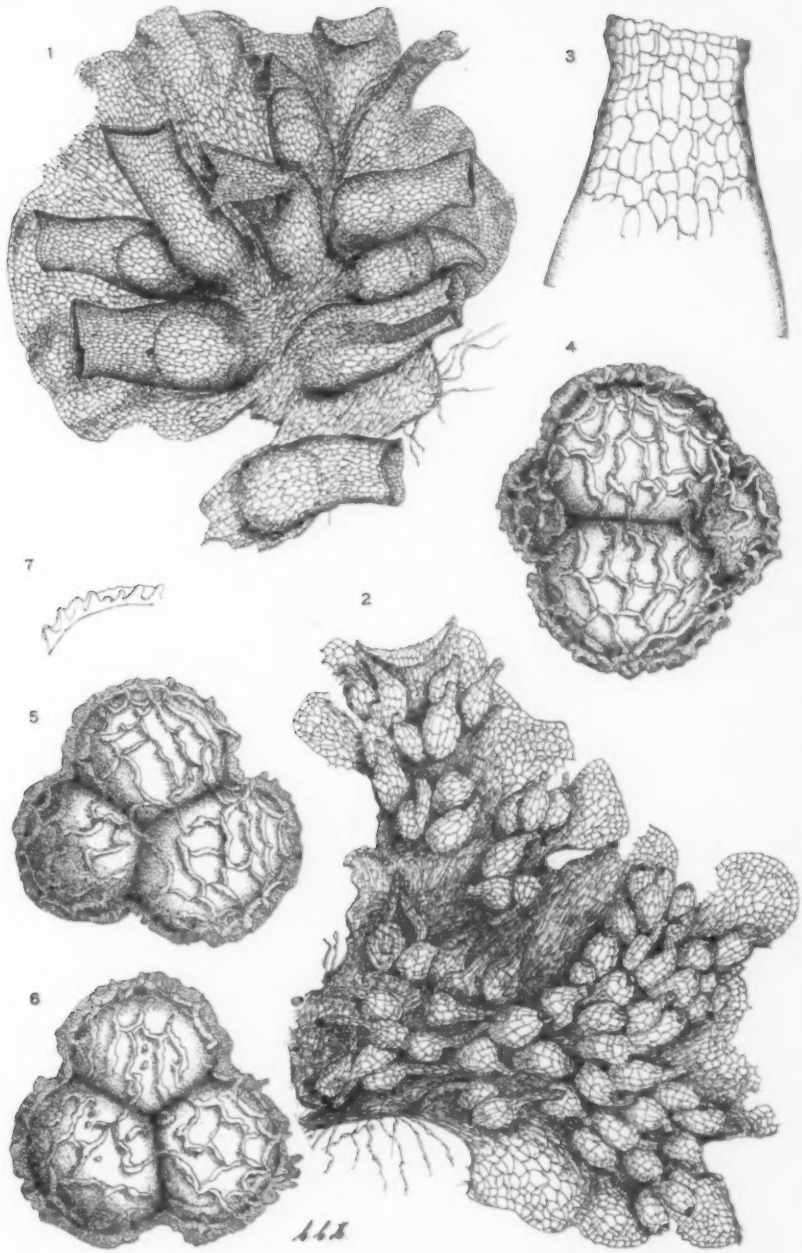


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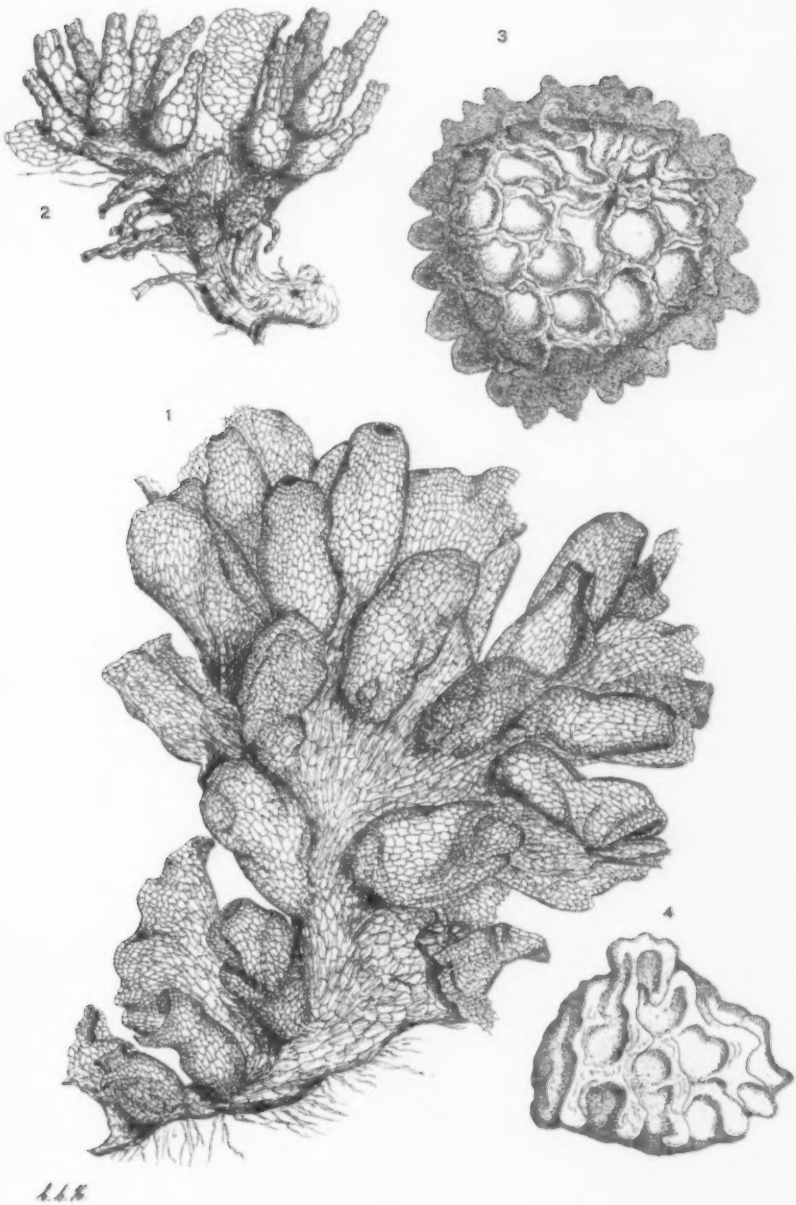


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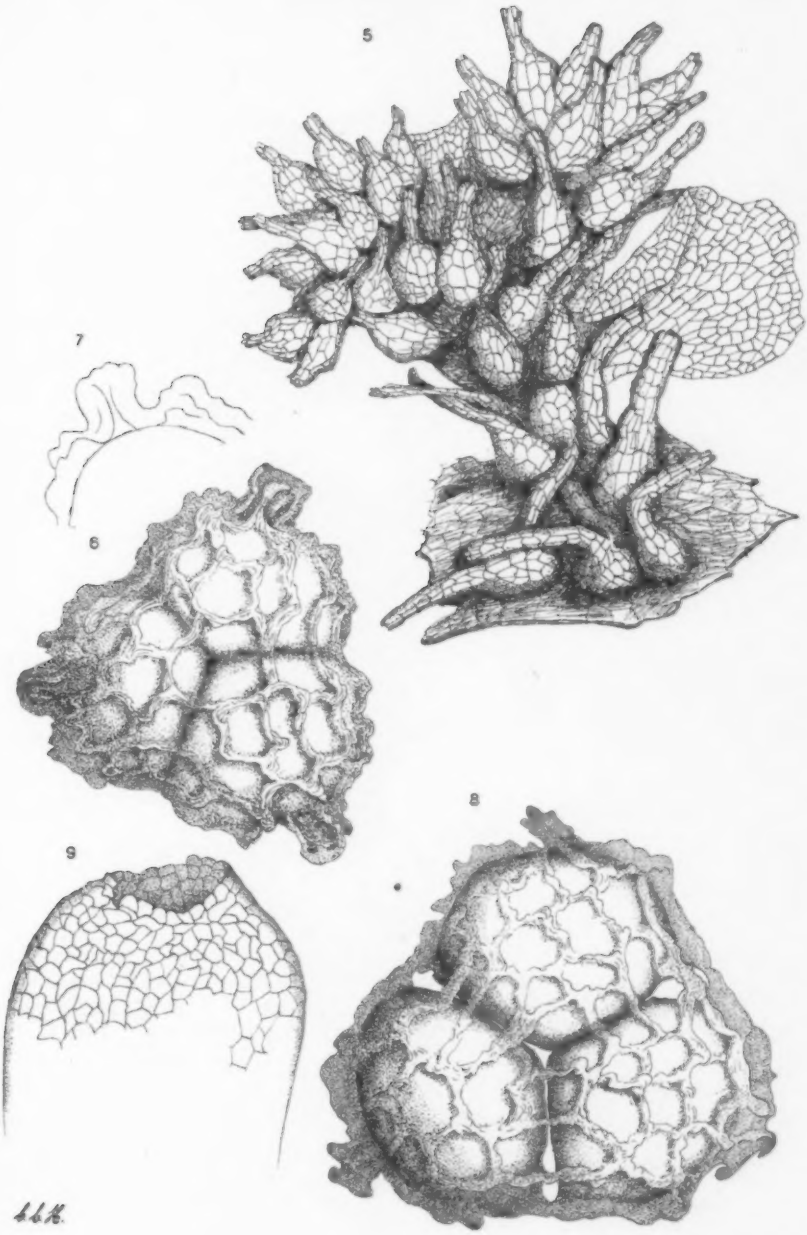


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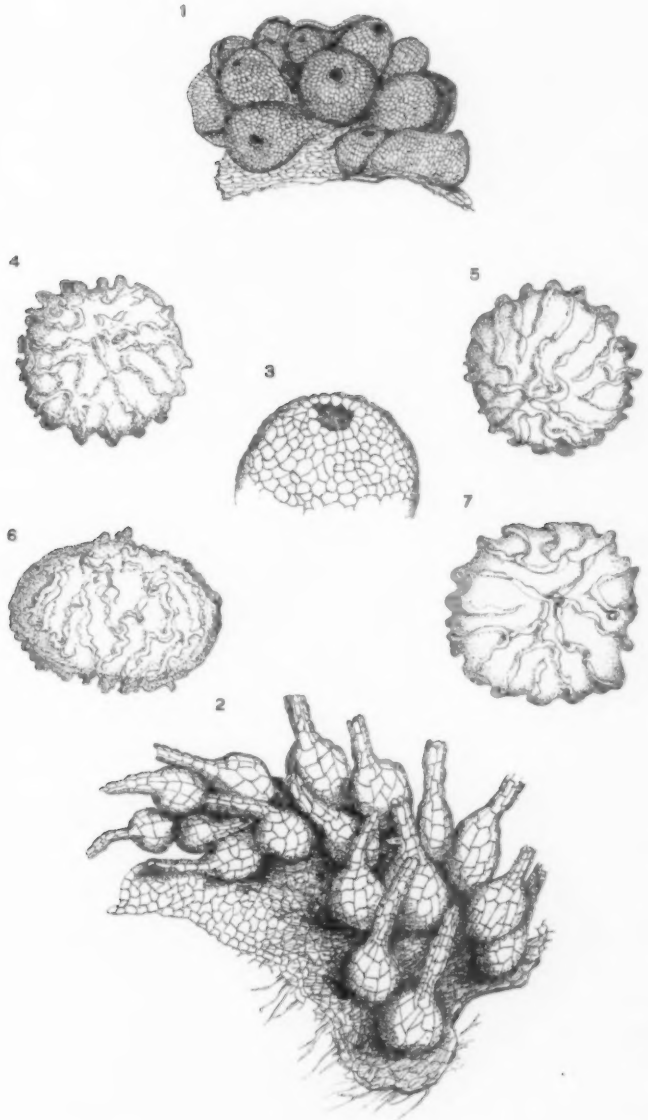


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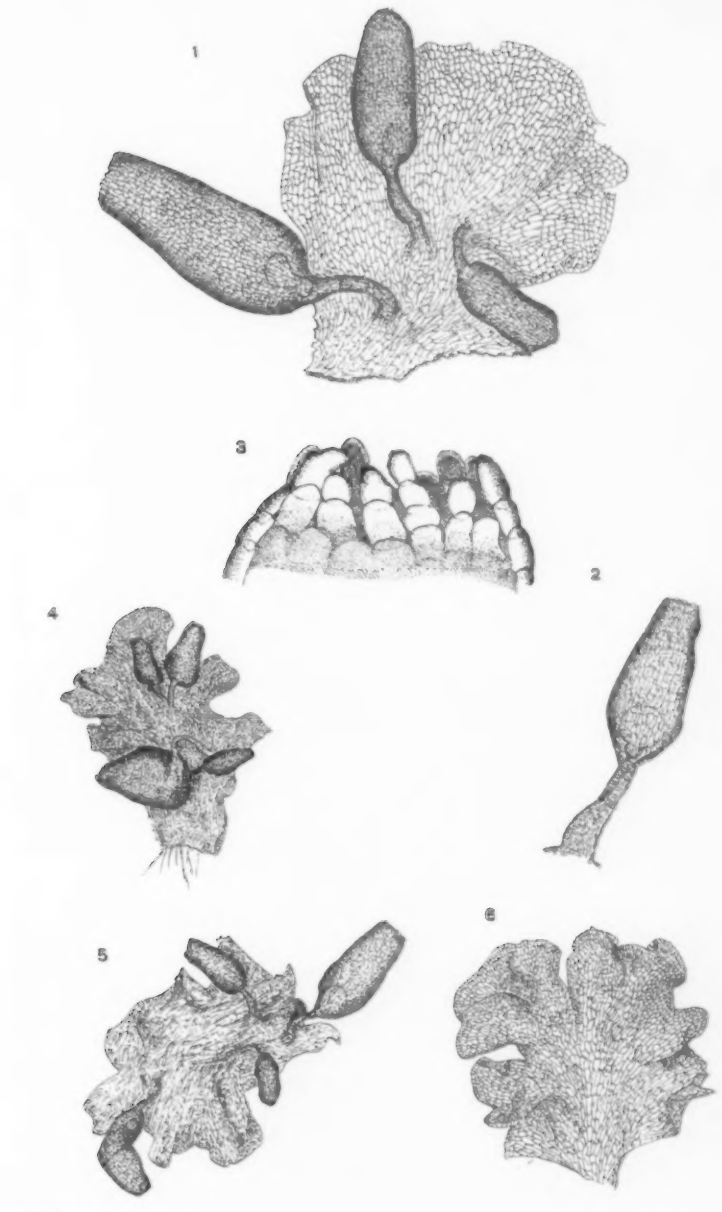


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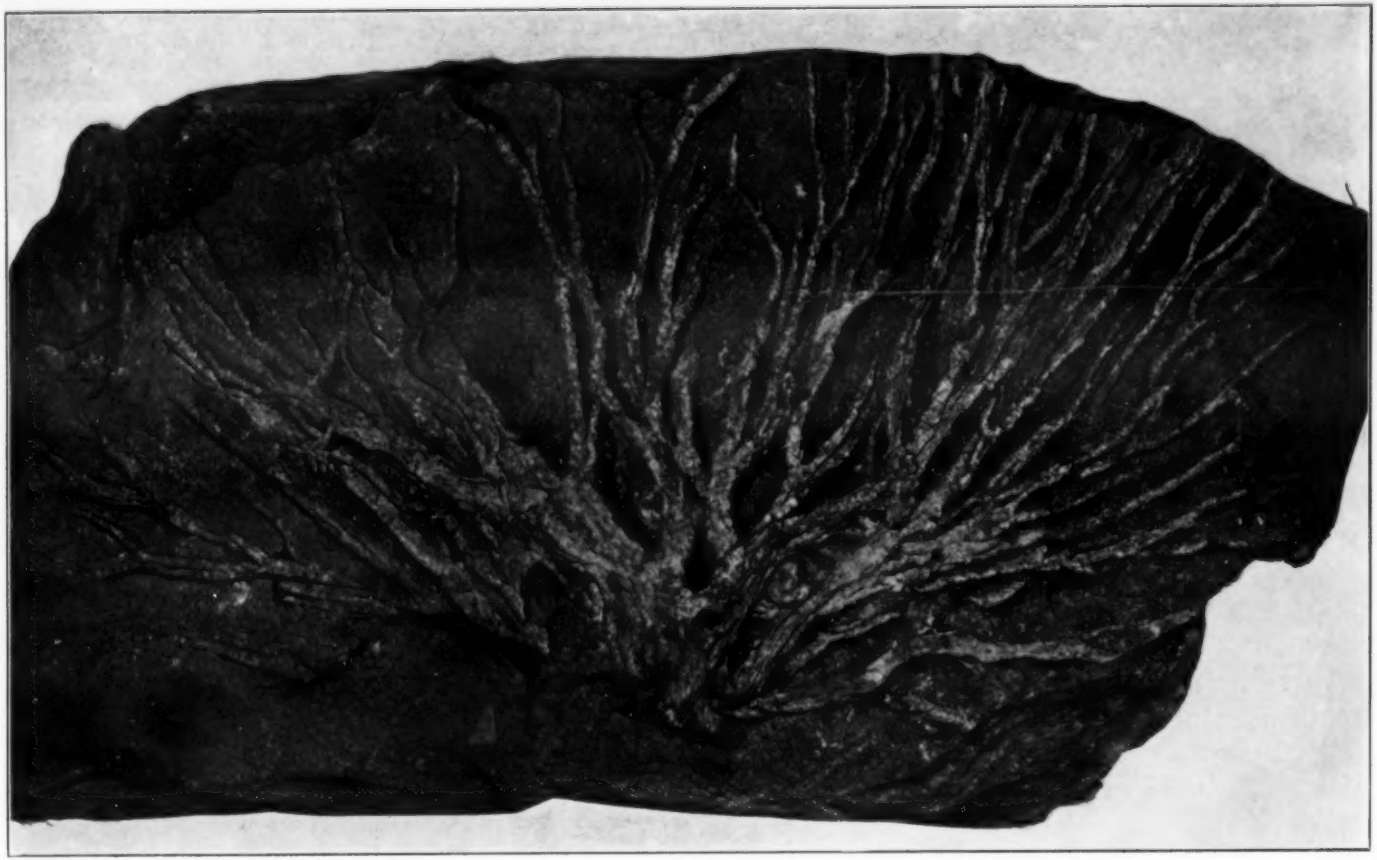

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VIOLA EGGLESTONII BRAINERD

VIOLA EGGLESTONII BRAINERD

VIOLA TRILOBA Schwein., var. DILATATA (Ell.) Brainerd

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Volumes 2 to 10. Fungi.
Volumes 11 to 13. Algae.
Volumes 14 and 15. Bryophyta.
Volume 16. Pteridophyta and Gymnospermae.
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Professor George F. Atkinson, of Cornell University, Professors Charles R. Barnes and John M. Coulter, of the University of Chicago, Mr. Frederick V. Coville, of the United States Department of Agriculture, Professor Edward L. Greene, of the United States National Museum, Professor Byron D. Halsted, of Rutgers College, and Professor William Trelease, of the Missouri Botanical Garden, have consented to act as an advisory committee.

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